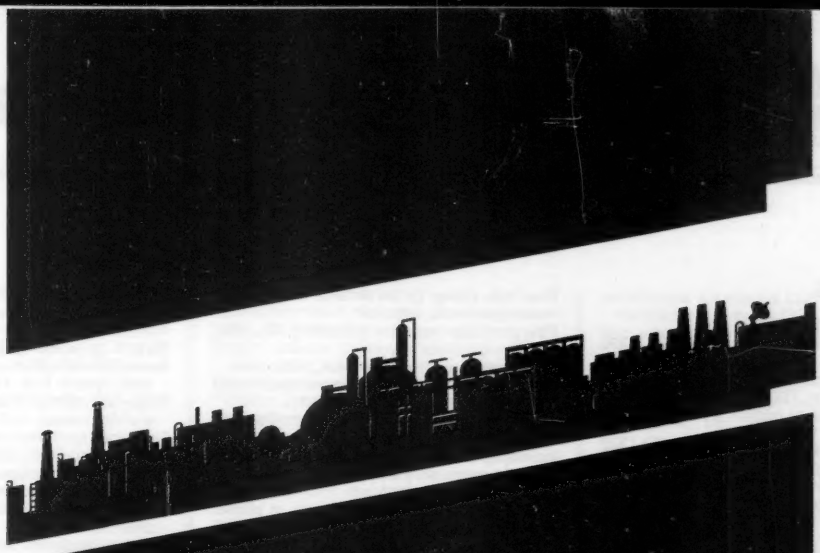

# 1990/ 1991/ 1992

# EDITORIAL INDEX

*The Control/Instrumentation Industry's Premier Editorial Publication*

**I&CS**

INSTRUMENTATION & CONTROL SYSTEMS

# I&CS Editorial Index: 1990-1992

## SUBJECTS


### ANALYZERS, ON-LINE

Automating on-line cyanide analysis; FEB, 1990, p81
Biosensing protects water quality, keeps paper mill in production; FEB, 1992, p78
DCS-based emissions monitor is flexible, easy to maintain; OCT, 1991, p33
Good pH measurements in bad process streams; DEC, 1990, p39
Meeting the demands of tougher air pollution regulations; NOV, 1991, p47
Meeting the sensor demands of the pharmaceutical industry; MAY, 1991, p34
Monitoring toxic gases in factory air; AUG, 1992, p55
New on-line process analyzers expand NIR capabilities; APR, 1991, p99
On-line chromatography keeps tabs on wastewater pollutants; APR, 1992, p63
On-line titro-analyzer cuts Kodak's product development costs; APR, 1990, p93
Sensors that help fight water pollution; AUG, 1991, p41
Staying ahead of new air pollution regulations; MAY, 1992, p65

### ANNUNCIATORS

Annunciator helps prevent costly damage in semiconductor plant; AUG, 1990, p64

### APPLICATION IDEAS

ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
Annunciator helps prevent costly damage in semiconductor plant; AUG, 1990, p64
Automating on-line cyanide analysis; FEB, 1990, p81
Bitbus helps up product quality via SPC; FEB, 1990, p84
Capacitive prox switches help bakery increase productivity; JUN, 1990, p109
Computer helps system keep close tabs on boiler temperatures; DEC, 1992, p61
Computerized telemetry system at utility saves water, improves service; NOV, 1990, p93
Control system to handle 197 million gallons of wastewater/day; APR, 1990, p101
Control system upgrades steel plant's reheat performance; MAY, 1990, p125
Controller and gas sensors clean up organic wastes; OCT, 1990, p181
Controller cuts woodworking machinery's setup time; MAY, 1992, p74
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
DAS eases process development task; FEB, 1990, p73
DAS speeds plating improvements; JAN, 1990, p99
DCS's on-line information improves resin process consistency; NOV, 1991, p63
DNC system speeds production of optics tooling at Polaroid; JUL, 1991, p73
Data acquisition network manages flood of information at dam; JUN, 1990, p103
Distributed control for cogeneration; FEB, 1990, p77
Drives, programmable controllers up freezer maker's flexibility; MAY, 1992, p71
Dual-processor PLC provides super-reliable machine control; NOV, 1990, p89
EL flat panels vs meters and CRTS; AUG, 1991, p45
Electrohydraulic valve actuators improve gas turbine fuel control; SEP, 1991, p71
Evaporator control ups efficiency of electrogalvanizing plant; JUN, 1990, p96
Ferroresonant UPS systems help Ford conduct crash tests; JAN, 1990, p115
Fiber optic cables go the distance in tough environments; AUG, 1992, p67
Filter plant uses mass-flow leak testing; JUL, 1992, p66
Flat panels control heat-treat; JUL, 1992, p70
Good planning and flexible systems lead to successful automation; JUN, 1990, p77
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
Increasing uptime, yield with CIM; MAR, 1990, p81
Industrial computers provide flexible multiaxis motion control; JAN, 1992, p81
Integrated cell control ups efficiency of plastics processing system; SEP, 1990, p99
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Integrating PLCs and DCSs via a computer and relational database; JUN, 1992, p79
LON chip: Building block for smart I/O; JUN, 1992, p71
Linear scale improves accuracy; OCT, 1991, p132
Linked PLCs control mine equipment; JUN, 1990, p107
Loop/logic controller improves output from 30-year-old rod mill furnace; OCT, 1991, p129
Macintosh controls composite material manufacturing process; MAR, 1990, p85
Mass flow and density sensor tightens control of alumina extraction; DEC, 1991, p47
Monitoring system cuts calibration costs at nuclear power station; JUN, 1990, p83
Monitoring system helps hydro plant avoid bearing repairs, downtime; APR, 1991, p104
Networked single-loop controllers: A low-cost way to increase flexibility; MAR, 1992, p 67
New calibrator helps flowmeter maker meet increased production demands; FEB, 1992, p67
New potentiometers reduce downtime, up production levels; MAY, 1990, p122
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
Off-the-shelf software controls complex workcell; AUG, 1990, p67
On-line titro-analyzer cuts Kodak's product development costs; APR, 1990, p93
PC-based DAS helps memory maker profile temperatures; APR, 1992, p79
PC-based DAS improves high-speed carton assembly line; SEP, 1992, p87
PLC helps clean up Superfund site; MAY, 1990, p111
PLC improves asphalt production; NOV, 1990, p91
PLC meets casting machine's special safety needs; JUN, 1990, p91
PLC-based SCADA system provides economical yet flexible control; OCT, 1990, p185
PLC-based system monitors and documents pollution abatement; FEB, 1991, p53
PLC/operator interface system cuts downtime at blowmolding plant; JAN, 1990, p103
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p99
PLCs and network speed infant formula production; JUN, 1991, p79
PLCs automate component testing; APR, 1990, p97
PLCs help flour mill double production; JUN, 1991, p77
PLCs, satellite control crude oil pipeline; SEP, 1991, p65
PLCs: Cornerstone of fiber plant's CIM installation; AUG, 1992, p33
Panel display/controller retrofit eases OI task, tightens control; OCT, 1990, p177
Parts tracking starts with character recognition; MAY, 1990, p101
Putting sensors to work in food; FEB, 1991, p23
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
STD system monitors wave soldering; MAY, 1990, p115
Sensors up tie line capacity; APR, 1990, p106
Shared SCADA system and software run suburban water system; FEB, 1991, p73
Single-loop controllers aid in safe, efficient disposal of toxic waste; JUN, 1990, p101
Single-loop controllers provide flexibile, cost-effective solution; SEP, 1990, p93
Software links processing and business operations and decisions; NOV, 1990, p87
Solving problems with digital meters; FEB, 1990, p69
State logic diagnostic system cuts fiber production downtime; MAR, 1991, p73
Tackling a bear of a synchro control problem; JAN, 1990, p107
Touchscreen terminals ease data entry; JUL, 1992, p72
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61
User-designed CIM for leads to better applications, higher productivity; NOV, 1990, p81
Viscosity control yields better circuit boards; DEC, 1990, p65
Workstations help control world's largest autoclave; SEP, 1990, p102

### ARTIFICIAL INTELLIGENCE/ EXPERT SYSTEMS

AI on the factory floor: Hot topic in the '80s...reality in the 90s? JAN, 1990, p90
ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
Computerizing maintenance expertise; MAR, 1990, p63
Monitoring system cuts calibration costs at nuclear power station; JUN, 1990, p83

### BATCH CONTROL

Batch operations software connects MIS with the plant floor; DEC, 1992, p58
Operator workstations team up with PLCs for batch control; NOV, 1990, p53
Using PLCs in in batch applications; JUN, 1990, p67

### BUS COMPATIBLE BOARDS

Applying the PC/AT architecture to Multibus II; SEP, 1990, p61
Bus state analyzers save time; APR, 1991, p91
DAS PC boards provide automatic calibration and configuration; MAR, 1990, p88
Do you really need a 32-bit bus? JUN, 1990, p63
EISA solution to plant floor integration; SEP, 1992, p31
Embedded VXIbus computers are AT and Mac compatible; MAY, 1990, p134
Enhanced STD 32 provides even higher performance; JUL, 1992, p21
Fiber optic bus links: A new option for remote data acquisition; JUL, 1991, p67
Integrating VME and VXI; MAR, 1990, p25
Intelligent host bus adapters increase SCSI-2 bus performance; MAR, 1992, p41
Multiprocessing on high-end buses; JAN, 1991, p57
New processors and capabilities keep the STD bus alive and well; JUL, 1992, p15
NuBus 92 expands original specification; JUL, 1992, p23
PC/104: A compact, modular embedded PC architecture; JUL, 1992, p25
Programmable controller plugs into AT and EISA bus systems; SEP, 1992, p90
Putting PC features on industrial bus; APR, 1992, p23
SCSI moves into the factory; OCT, 1991, p71
STD bus system monitors wave soldering machine; MAY, 1990, p115

*The following is a guide to all of the articles published in I&CS magazine from 1990 through 1992. You can reference the articles by subject, title, and/or author. To purchase reprints of any articles listed, see ordering information on the bottom of page 16.*


STD handles I/O tasks for Multibus II; SEP, 1990, p56
Software issues for bus boards: Check the operating system first! DEC, 1990, p45
Using ARTIC in PC-based distributed control systems; OCT, 1990, p47
VMEbus PLC saves, programs easily; OCT, 1991, p134

**CALIBRATION**

Calibration ups accuracy, profits; JAN, 1992, p73
New calibrator helps flowmeter maker meet increased production demands; FEB, 1992, p67
Setting up a calibration program; JAN, 1992, p77
System thermometer for process measurements and RTD calibration; JUN, 1991, p81

**CELL CONTROL**

AT module plugs into PLC backplane; MAR, 1991, p80
CMI: The new goal of cell control; AUG, 1990, p27
Integrated cell control ups efficiency of plastics processing system; SEP, 1990, p99
Manufacturing integration: Developing a cell control strategy—Pt. 1; OCT, 1990, p71
Manufacturing integration: Developing a cell control strategy—Pt. 2; NOV, 1990, p65
Off-the-shelf software controls complex workcell; AUG, 1990, p67
The cell controller in a PLC environment; AUG, 1990, p33
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25

**CIM (see also "Factory Automation")**

Application software selection: Ten rules of the road to CIM; NOV, 1990, p25
Batch operations software connects MIS with the plant floor; DEC, 1992, p58
CIM is about business results, not information; AUG, 1992, p4
Client-server systems in manufacturing; SEP, 1991, p23
GM builds competitiveness on open systems and strategic alliances; AUG, 1992, p29
Increasing uptime, yield with CIM; MAR, 1990, p81
More computers will tackle total plant management; JAN, 1991, p67
PLCs: Cornerstone of fiber plant's CIM installation; AUG, 1992, p33
Relational database: Backbone of CIM; SEP, 1991, p39
Roundtable: The road to CIM in the process industries; MAY, 1991, p44
Saturn Corp. finds MMS key to flexible CIM development; AUG, 1992, p23
Survival at IBM Toronto: Flexibility is key to global competitiveness; AUG, 1992, p45
User-designed CIM leads to better applications, higher productivity; NOV, 1990, p81
Workstation has GUI, mouse emulator ; APR, 1991, p111

**COLOR GRAPHICS**

Case for video control panels; MAY, 1991, p69
EL flat panels vs meters and CRTS; AUG, 1991, p45
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
Is there a flat panel in your future? MAY, 1992, p27
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
Operator interfaces versus workstations; MAY, 1991, p53

**COMMUNICATIONS (see also "LANs")**

ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
BITBUS: A good choice for the factory floor; JUN, 1991, p73
Bridging MAP to Ethernet; NOV, 1991, p57
Connectivity should be a hardware design criterion; JUN, 1991, p70
Control software downloads applications to network nodes; MAR, 1991, p77
Data acquisition network manages flood of information at dam; JUN, 1990, p103
Fiber optic bus links: A new option for remote data acquisition; JUL, 1991, p67
Fiber optic cables go the distance in tough environments; AUG, 1992, p67
Fieldbus standard: We need a winner! OCT, 1992, p29
Fieldbus standardization: Another way to go; MAR, 1991, p49
Finally, a bright light at the end of the tunnel; OCT, 1992, p15
Five-year growth in fiber optic backbone networks looks good; JAN, 1990, p91
Industrial broadband networking comes of age; NOV, 1990, p57
Intelligent host bus adapters increase SCSI-2 bus performance; MAR, 1992, p41
MAP: A status report; NOV, 1991, p53
Networking motor controls and drives digitally; APR, 1990, p53
Networking software: A case for distributed systems; NOV, 1990, p31
PLCs and network speed infant formula production; JUN, 1991, p79
PLCs, satellite control crude oil pipeline; SEP, 1991, p65
Q & A Session: The Interoperable Systems Project; OCT, 1992, p33
Real-time DAS goes network; MAY, 1990, p127
SCSI moves into the factory; OCT, 1991, p71
SP50 standard: Patience will pay off; MAR, 1991, p43
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71

**COMPUTERS**

A-B unveils new software and I/O, enhanced controllers and computers; APR, 1991, p109
AT module plugs into PLC backplane; MAR, 1991, p80
Applying the PC/AT architecture to Multibus II; SEP, 1990, p61
Bus state analyzers save time; APR, 1991, p91
Case against DOS-based PCs in control; APR, 1992, p29
Choosing a computer platform for data acquisition applications; JAN, 1991, p31
Client-server systems in manufacturing; SEP, 1991, p23
Color workstations are rugged and AT-compatible; NOV, 1992, p72
Connectivity should be a hardware design criterion; JUN, 1991, p70
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
Embedded PCs: Design the application, not the computer; SEP, 1990, p77
Embedded VXIbus computers are AT and Mac compatible; MAY, 1990, p134
Fault-tolerant personal computers safeguard critical applications; SEP, 1992, p23
Industrial PC hardware: No end to advancements in sight; APR, 1990, p33
Industrial PC software: The driving force is openness; APR, 1990, p41
Industrial workstations feature 50 MHz RISC chip; NOV, 1992, p74
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Integrating PLCs and DCSs via a computer and relational database; JUN, 1992, p79
Interface processor works with PLCs and DCSs; FEB, 1990, p86
LabWindows 2.0 extends DOS for test and measurement applications; DEC, 1990, p70
Mac software gets DOS counterpart; JAN, 1990, p118
Macintosh controls composite material manufacturing process; MAR, 1990, p85
Minicomputer technology: Where it's been, where it's headed; DEC, 1991, p31
More computers will tackle total plant management; JAN, 1991, p67
Multiprocessing on high-end buses; JAN, 1991, p57
New distributed control computer products feature open architecture; MAR, 1992, p79
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
PC OI tough to beat, sure to be pounded; MAY, 1992, p4
PC hardware takes on the mainframes; APR, 1991, p35
PC operating systems: Which will win? APR, 1991, p49
PC-based DAS helps memory maker profile temperatures; APR, 1992, p79
PC-based DAS improves high-speed carton assembly line; SEP, 1992, p87
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p99
Plunging PC prices bring smiles...to some; APR, 1992, p4
Putting PC features on industrial bus; APR, 1992, p23
Take the bus...and leave driving to us; APR, 1992, p33
Using ARTIC in PC-based distributed control systems; OCT, 1990, p47
When the going gets tough, industrial PCs keep going! MAY, 1990, p79
Why the Mac works in control; APR, 1991, p81

**CONNECTORS**

High-performance connectors handle high-speed digital demands; AUG, 1992, p64

**CONTROLLERS, PROCESS**

Choosing level measurement and control instruments; FEB, 1991, p35
Loop and logic controllers solve several application problems; MAR, 1991, p86
Model predictors: The first smart controllers; SEP, 1991, p49
Multiloop controllers become multifunctional; AUG, 1992, p51
Networked single-loop controllers: A low-cost way to increase flexibility; MAR, 1992, p 67
Process controllers to grow 13.8%; JAN, 1991, p67
Single-loop controllers aid in safe, efficient disposal of toxic waste; JUN, 1990, p101
Single-loop controllers provide flexibility; SEP, 1990, p93
Temperature controllers are getting smaller and better; JUN, 1991, p27
Thermal gas mass flow controllers move into the process industries; FEB, 1991, p31
Today's DPMs: Meters and much more; AUG, 1991, p47

**CORPORATE DECISION-MAKERS SPEAK OUT**

An exclusive interview with David Bigler of Johnson Yokogawa; OCT, 1992, p85
An exclusive interview with Don Davis of Allen-Bradley; OCT, 1990, p67
An exclusive interview with Ed Hurd of Honeywell; MAR, 1990, p55
An exclusive interview with Steve Rubin of Intellution; OCT, 1991, p65

**DATA ACQUISITION**

Automating on-line cyanide analysis; FEB, 1990, p81

Choosing a computer platform for data acquisition applications; JAN, 1991, p31
Computerized telemetry system at utility saves water, improves service; NOV, 1990, p93
Data acquisition system eases process development task; FEB, 1990, p73
DAS PC boards provide automatic calibration and configuration; MAR, 1990, p88
DAS speeds plating improvements; JAN, 1990, p99
DAS users demand more; JAN, 1992, p15
Data acquisition developers overcome Windows' limitations; DEC, 1992, p41
Data acquisition network manages flood of information at dam; JUN, 1990, p103
Data acquisition: User demands change system offerings; JAN, 1990, p31
Data logger helps steel maker maximize production efficiency; OCT, 1992, p121
Device brings real-time data acquisition to workstations; APR, 1992, p88
Fine tuning data acquisition; JAN, 1991, p23
From SCADA to multiuser management networks; NOV, 1992, p43
I/O boards take on system tasks; DEC, 1992, p25
LabWindows 2.0 extends DOS for test and measurement applications; DEC, 1990, p70
Monitoring system cuts calibration costs at nuclear power station; JUN, 1990, p83
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
PC-based DAS helps memory maker profile temperatures; APR, 1992, p79
PC-based DAS improves high-speed carton assembly line; SEP, 1992, p87
PLC-based SCADA system provides economical yet flexible control; OCT, 1990, p185
PLC-based system monitors and documents pollution abatement; FEB, 1991, p53
Real-time DAS goes network; MAY, 1990, p127
Shared SCADA system and software run suburban water system; FEB, 1991, p73
Single-function vs multifunction data acquisition boards; DEC, 1992, p29

**DATA CONVERTERS**

Getting transducers to talk to digital computers—Pt. 1; OCT, 1991, p57
Getting transducers to talk to digital computers—Pt. 2; NOV, 1991, p43
Modern digital data converters are fast and affordable; APR, 1990, p87
New techniques for A/D conversions; APR, 1990, p59
What's new in A/D converters? JUN, 1992, p67

**DIGITAL PANEL METERS**

Solving problems with digital meters; FEB, 1990, p69
Today's DPMs: Meters and much more; AUG, 1991, p47

**DISTRIBUTED CONTROL SYSTEMS**

Choosing a DCS vendor: Make total quality the key qualification; OCT, 1990, p53
Control system handles 197 million gallons of wastewater/day; APR, 1990, p101
Control system upgrades steel plant's reheat performance; MAY, 1990, p125
Customer protection continues with TDC 3000 upgrade; FEB, 1992, p83
DCS ball is in the user's court; OCT, 1991, p4
DCS front end gets enhancements, including a new processor; MAY, 1990, p129
DCS inspired by customers; AUG, 1990, p72
DCS technology update; OCT, 1991, p27
DCS's on-line information improves resin process consistency; NOV, 1991, p63
DCS, PLC aid chemical storage; OCT, 1991, p47
DCS-based emissions monitor is flexible, easy to maintain; OCT, 1991, p33
DCSs: Here to stay, but changing; MAR, 1992, p21
Distributed control for cogeneration; FEB, 1990, p77
Distributed control: Another way to go; OCT, 1992, p35
Distributed control: Capabilities merge, communications open up; OCT, 1990, p30
Distributed, open architecture system installs fast, ups flexibility; NOV, 1992, p69
Evaporator control ups efficiency of electrogalvanizing plant; JUN, 1990, p96
Fieldbus standard: We need a winner! OCT, 1992, p29
Finally, a bright light at the end of the tunnel; OCT, 1992, p15
From SCADA to multiuser management networks; NOV, 1992, p43
I/O modules adapt to decentralized distributed control strategies; DEC, 1992, p19
Increasing uptime, yield with CIM; MAR, 1990, p81
Integrating PLCs and DCSs via a computer and relational database; JUN, 1992, p79
Networked, intelligent I/O for distributed control; DEC, 1992, p59
New distributed control computer products feature open architecture; MAR, 1992, p79
Open solutions: Are you locked out? OCT, 1992, p23
PLC-based DCSs make the most of existing control equipment; OCT, 1990, p41
Q & A Session: The Interoperable Systems Project; OCT, 1992, p33
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61
Using ARTIC in PC-based DCSs; OCT, 1990, p47
Windows 3.0, 68020 boost DCS productivity, enhance performance; OCT, 1991, p136

**DRIVES, ADJUSTABLE-SPEED**

Adjustable ac drives affect range of performance variables; OCT, 1990, p111
Digital adjustable-speed drives up throughput and productivity; OCT, 1990, p97
Engineering standards that impact motor control design and selection; JUL, 1990, p69
Ford's high-speed LIM conveyor: A demanding controls task; OCT, 1990, p137
Networking motor controls digitally; APR, 1990, p53
Variable speed drives: What's new? JAN, 1990, p51
Variable speed motor controls give printers precise exposures; OCT, 1990, p114

**EDITOR'S VIEWS**

An ignored standard!; SEP, 1992, p21
Another way to lose competitive advantage; DEC, 1991, p13
Buying technology can be difficult; MAR, 1991, p23
Case of too much of a good thing; JAN, 1991, p21
Change: Make it work to your advantage; DEC, 1992, p15
Control starts with good input; MAY, 1990, p37
Cost of ownership: a competitive tool; FEB, 1990, p27
DCSs: Here to stay, but changing; MAR, 1992, p21
Dear Mr. President and Congress; JAN, 1992, p13
Doing the right thing isn't easy; OCT, 1990, p27
Finally, a bright light at the end of the tunnel; OCT, 1992, p15
Firms appoint new pollution "bag holders"; NOV, 1992, p15
Free wasn't free... NOV, 1990, p21
Global quality, or else!; MAY, 1991, p25
Help, help, who has the answers?; AUG, 1991, p15
ISO 9000 provides extra benefits; JUN, 1992, p21
Let the problem determine the solution; APR, 1991, p23
Lists don't get the job done; NOV, 1991, p23
Motivation: Not always money; APR, 1990, p31
New networking "kid" could be blockbuster; MAY, 1992, p25
Only engineers need apply...; APR, 1992, p15
Performance: The new control target; MAR, 1990, p23
Pollution: negatives and positives; JUL, 1992, p13
Repeating history; AUG, 1992, p21
Short term's good too! JAN, 1990, p25
Staying power is critical; SEP, 1991, p21
Systems integration: "It ain't easy!" JUN, 1990, p29
Systems integrators come in four flavors; FEB, 1992, p21
The buck could stop with you; JUL, 1990, p23
The fourth platform: Where the action is; AUG, 1990, p25
There are risks...and there are risks!; FEB, 1991, p21
Things are better than we think!; JUL, 1991, p15
U.S. schools have "product" problems; JUN, 1991, p25
We talk too much...; OCT, 1991, p23
"Humanizing" software; DEC, 1990, p21
"Quality" isn't what it used to be; SEP, 1990, p27

**EMI**

Don't let EMI negate the power of today's faster control systems; JAN, 1992, p23
High-performance connectors handle high-speed digital demands; AUG, 1992, p64
Fiber optic cables go the distance in tough environments; AUG, 1992, p67

**FACTORY AUTOMATION**

BITBUS: A good choice for the factory floor; JUN, 1991, p73
Good signal conditioning—Pt. 1; MAY, 1991, p85
Good signal conditioning—Pt. 2; JUN, 1991, p61
Vision systems focus on color, motion; JUL, 1991, p21
A-B to announce controller products plus alliance at ISA/91; OCT, 1991, p147
An integrated approach to machine control; AUG, 1991, p28
Brushless servomotor and controller cut manufacturer's waste, setup time; NOV, 1991, p33
Disc motors offer high performance in a low-cost package; NOV, 1991, p25
EL flat panels vs meters and CRTS; AUG, 1991, p45
Electrohydraulic drives offer high power, precise positioning; AUG, 1991, p33
Ground loops: Causes and cures; DEC, 1991, p43
Industrial relays are alive and well! JUL, 1991, p61
Laser sensors pay off in accuracy; JUL, 1991, p51
Linear scale improves accuracy; OCT, 1991, p132
MAP: A status report; NOV, 1991, p53
PLCs, satellite control crude oil pipeline; SEP, 1991, p65
Relational database: Backbone of CIM; SEP, 1991, p39
SCSI moves into the factory; OCT, 1991, p71
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71
Solid-state motor controllers solve pump surge problems; NOV, 1991, p29
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25
AI on the factory floor: Hot topic in the '80s...reality in the 90s? JAN, 1990, p90
ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
Adjustable ac drives affect range of performance variables; OCT, 1990, p111
Application software selection: Ten rules of the road to CIM; NOV, 1990, p25
Applying proximity sensors—Pt. 1; SEP, 1991, p45
Applying proximity sensors—Pt. 2; OCT, 1991, p99
Applying strip chart recorders; OCT, 1991, p75
Applying the PC/AT architecture to Multibus II; SEP, 1990, p61
Bitbus helps valve stem maker up product quality via SPC; FEB, 1990, p84
Bridging MAP to Ethernet; NOV, 1991, p57
Brushless AC servo controller/motor family is modular and compact; APR, 1990, p111
CMI: The new goal of cell control; AUG, 1990, p27
Capacitive prox switches help bakery increase productivity; JUN, 1990, p109
Case against DOS-based PCs in control; APR, 1992, p29
Case for video control panels; MAY, 1991, p69
Choosing a computer platform for data acquisition applications; JAN, 1991, p31
Choosing an I/O strategy for industrial applications; SEP, 1991, p29
Client-server systems in manufacturing; SEP, 1991, p23
Computer I/O: Something for every architecture; JUL, 1990, p35
Connectivity should be a hardware design criterion; JUN, 1991, p70

Control software downloads applications to network nodes; MAR, 1991, p77
Controller cuts woodworking machinery's setup time; MAY, 1992, p74
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
DAS PC boards provide automatic calibration and configuration; MAR, 1990, p88
Data acquisition: User demands change system offerings; JAN, 1990, p31
Designing and integrating workstations into plant operations; MAY, 1990, p57
Developing an industrial OI terminal and workstation plan; JUL, 1990, p73
Digital adjustable-speed drives up throughput and productivity; OCT, 1990, p97
Drives, programmable controllers up freezer maker's flexibility; MAY, 1992, p71
Dual-processor PLC provides super-reliable machine control; NOV, 1990, p89
Electrohydraulic valve actuators improve gas turbine fuel control; SEP, 1991, p71
Embedded PCs: Design the application, not the computer; SEP, 1990, p77
Embedded VXIbus computers are AT and Mac compatible; MAY, 1990, p134
Engineering standards that impact motor control design and selection; JUL, 1990, p69
Evaporator control ups efficiency of electrogalvanizing plant; JUN, 1990, p96
Fiber optic bus links: A new option for remote data acquisition; JUL, 1991, p67
Fine tuning data acquisition; JAN, 1991, p23
Flat panels control heat-treat; JUL, 1992, p70
Ford's high-speed LIM conveyor: A demanding controls task; OCT, 1990, p137
Fuzzy logic smooths system control; MAR, 1992, p45
Good planning and flexible systems lead to successful automation; JUN, 1990, p77
Hardware/software simplifies elements of control; MAY, 1990, p131
Heading off problems in photoelectric applications; OCT, 1992, p43
High end PLC for machine control, supervisory applications; MAR, 1990, p92
High hopes for fiber optic LANs: FDDI makes its bid for control; DEC, 1990, p51
I/O technology update; DEC, 1991, p19
Industrial PC hardware: No end to advancements in sight; APR, 1990, p33
Industrial PC software: The driving force is openness; APR, 1990, p41
Industrial broadband networking comes of age; NOV, 1990, p57
Industrial computers offer more power for less money; SEP, 1990, p28
Industrial computers provide flexible multiaxis motion control; JAN, 1992, p81
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Intelligent modules: A smart way to link PLCs to the factory floor; JUL, 1990, p38
Loop/logic controller improves output from 30-year-old rod mill furnace; OCT, 1991, p129
Machine vision systems "lookin' good"; NOV, 1990, p76
Magnetic displacement sensing lets you see inside housings; JUL, 1991, p29
Manufacturing automation strategy includes PLCs, communications; MAY, 1992, p76
Manufacturing integration: Developing a cell control strategy—Pt. 1; OCT, 1990, p71
Manufacturing integration: Developing a cell control strategy—Pt. 2; NOV, 1990, p65
Measuring hot metals on the move; JUN, 1992, p25
Micro PLC has big features; JAN, 1991, p88
Minicomputer technology: Where it's been, where it's headed; DEC, 1991, p31
Modern digital data converters are fast and affordable; APR, 1990, p87
More computers will tackle total plant management; JAN, 1991, p67
Multiprocessing on high-end buses; JAN, 1991, p57
Need a hard copy of your measurement data? OCT, 1990, p75
Networked, intelligent I/O for distributed control; DEC, 1992, p59
Networking motor controls and drives digitally; APR, 1990, p53
Networking multiple processors increases computing speed; SEP, 1990, p47
New potentiometers reduce downtime, up production levels; MAY, 1990, p122
New processor, new modules, new language enhance 984 line; MAR, 1992, p73
New techniques for A/D conversions; APR, 1990, p59
Object oriented programming cuts development time, boosts reliability; MAR, 1991, p53
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
Off-the-shelf software controls complex workcell; AUG, 1990, p67
Operator interfaces key to future; JAN, 1991, p67
Operator interfaces versus workstations; MAY, 1991, p53
PC hardware takes on the mainframes; APR, 1991, p35
PC operating systems: Which will win? APR, 1991, p49
PLC improves asphalt production; NOV, 1990, p91
PLC meets casting machine's special safety needs; JUN, 1990, p91
PLC offers big system features for fewer dollars; APR, 1990, p108
PLC-based SCADA system provides economical yet flexible control; OCT, 1990, p185
PLC/operator interface system cuts downtime at blowmolding plant; JAN, 1990, p103
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p99
PLCs and network speed infant formula production; JUN, 1991, p79
PLCs automate component testing; APR, 1990, p97
PLCs help flour mill double production; JUN, 1991, p77
PLCs: New challenges lie ahead; MAR, 1992, p25
PLCs: What's ahead? MAR, 1990, p37
PLCs: What's new? MAR, 1991, p25
Panel display/controller retrofit eases OI task, tightens control; OCT, 1990, p177
Parallel processing in control; SEP, 1990, p41
Parts tracking starts with character recognition; MAY, 1990, p101
Practical approach to SPC/SQC; DEC, 1990, p29
Programmable controller uses twisted-pair I/O network; JAN, 1991, p92
Putting photoelectric devices to work in the real world; AUG, 1990, p39
Real-time DAS goes network; MAY, 1990, p127
Remote motion interface simplifies machine control; JUN, 1990, p106
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
STD handles I/O tasks for Multibus II; SEP, 1990, p56
Saturn Corp. finds MMS key to flexible CIM development; AUG, 1992, p23
Selecting a UPS for industrial control applications; OCT, 1990, p61
Selecting and applying I/O; DEC, 1991, p25
Smart single channel I/O saves dollars; JUL, 1990, p31
Software issues for bus boards: Check the operating system first! DEC, 1990, p45
Software key to flexible motion control; DEC, 1990, p57
Software links processing and business operations and decisions; NOV, 1990, p87
Solving problems with digital meters; FEB, 1990, p69
Specifying and installing presence sensors: Some dos and don'ts; NOV, 1990, p44
Standard graphical user interfaces give OIs a common look and feel... MAY, 1990, p49
State logic diagnostic system cuts fiber production downtime; MAR, 1991, p73
Tackling a bear of a synchro control problem; JAN, 1990, p107
Tackling the servo vs stepper decision; MAY, 1991, p27
Taking the mystery out of microcontroller selection—Pt. 1; AUG, 1991, p19
Taking the mystery out of microcontroller selection, 1991, pt. 2; SEP, 1991, p55
The cell controller in a PLC environment; AUG, 1990, p33
The fourth platform: Where the action is; AUG, 1990, p25
Today's noncontact sensors do more; MAY, 1990, p73
Touchscreen terminals ease data entry; JUL, 1992, p72
Touchscreens find a home in the factory; MAY, 1991, p59
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61
User-designed CIM leads to better applications, higher productivity; NOV, 1990, p81
Using proximity sensors to measure position; OCT, 1990, p95
VMEbus PLC saves, programs easily; OCT, 1991, p134
Variable speed drives: What's new? JAN, 1990, p51
What a systems integrator can do; FEB, 1991, p49
What line scan vision systems can do for you; MAY, 1991, p78
When the going gets tough, industrial PCs keep going! MAY, 1990, p79
Why the Mac works in control; APR, 1991, p81
Why ultrasonics for noncontact position sensing? APR, 1992, p39
Windows 3.0 and DDE help PCs move data around the plant floor; APR, 1991, p77
Windows software combines modeling, PLC code generation; OCT, 1991, p146
Workstation has GUI, mouse emulator ; APR, 1991, p111
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstations help control world's largest autoclave; SEP, 1990, p102
World PLC market to hit $5.5 billion; JAN, 1991, p67
Networking software: A case for distributed systems; NOV, 1990, p31

## FAULT TOLERANCE

Fault-tolerant personal computers safeguard critical applications; SEP, 1992, p23
Networked, intelligent I/O for distributed control; DEC, 1992, p59
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61

## FIBER OPTICS

Five-year growth in fiber optic backbone networks looks good; JAN, 1990, p91
High hopes for fiber optic LANs: FDDI makes its bid for control; DEC, 1990, p51

## FLOW, LEVEL, PRESSURE

Choosing level measurement and control instruments; FEB, 1991, p35
Mass flow and density sensor tightens control of alumina extraction; DEC, 1991, p47
Smart pressure transmitters; FEB, 1991, p39
Coriolis mass flowmeter is ready for the tough jobs; FEB, 1992, p25
Filter plant uses mass-flow leak testing; JUL, 1992, p66
Flow sensors: Coriolis leads the market; JAN, 1990, p92
Flowmeters: Accuracies are better, prices lower; FEB, 1990, p29
Guide to flow measurement; FEB, 1990, p59
Guide to flow measurement; FEB, 1991, p63
Guide to flow measurement; FEB, 1992, p59
Level measurement: Pressure methods dominate; FEB, 1990, p35
Magmeters tackle the tough tasks; FEB, 1992, p23
Model 1151 Smart Pressure Transmitter keeps getting better; OCT, 1991, p145
New capacitance pressure sensor minimizes thermal effects; FEB, 1992, p41
Pressure measurement: Small and accurate pre-

vail; FEB, 1990, p41
Putting the pressure on pressure sensing technology; FEB, 1990, p35
Sorting out liquid level sensors; FEB, 1992, p31
Thermal gas mass flow controllers move into the process industries; FEB, 1991, p31
Upgrading your bubbler: Add on or install new? NOV, 1992, p59

**FOOTNOTES**

Advanced I/O cuts costs, ups capabilities; DEC, 1992, p4
CIM is about business results, not information; AUG, 1992, p4
DCS ball is in the user's court; OCT, 1991, p4
Even computers are talent driven; Nov, 1991, p4
Industrial computers; SEP, 1992, p4
It's time to roll up your sleeves...again!; JAN, 1992, p4
Keep those letters coming!; SEP, 1991, p4
Let's clear the air; FEB, 1992, p4
Letter drives feature on software drivers; JUN, 1991, p4
PC OI tough to beat, sure to be pounded; MAY, 1992, p4
Plunging PC prices bring smiles; APR, 1992, p4
Sensors series tackles the tough tasks; AUG, 1991, p4
Software: The new hardpan of control; MAR, 1992, p4
Technical services to see 130% growth; NOV, 1992, p4
That bomb's still ticking, folks!; JUN, 1992, p4
Two good, too much, from two firms...; JUL, 1991, p4

**INDUSTRIAL COMPUTERS (see also "Computers")**

AT module plugs into PLC backplane; MAR, 1991, p80
Choosing a computer platform for data acquisition applications; JAN, 1991, p31
Computer helps system keep close tabs on boiler temperatures; DEC, 1992, p61
Controller cuts woodworking machinery's setup time; MAY, 1992, p74
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
EISA solution to plant floor integration; SEP, 1992, p31
Fault-tolerant personal computers safeguard critical applications; SEP, 1992, p23
I/O boards take on system tasks; DEC, 1992, p25
Industrial computers offer more power for less money; SEP, 1990, p28
Industrial computers provide flexible multiaxis motion control; JAN, 1992, p81
Industrial computers; SEP, 1992, p4
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Interface processor works with PLCs and DCSs; FEB, 1990, p86
Is 2.0 greater than 3.1? SEP, 1992, p35
Laptop moves into industrial jobs; SEP, 1992, p55
Minicomputer technology: Where it's been, where it's headed; DEC, 1991, p31
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
More computers will tackle total plant management; JAN, 1991, p67
Multiprocessing on high-end buses; JAN, 1991, p57
Networking multiple processors increases computing speed; SEP, 1990, p47
PC hardware takes on the mainframes; APR, 1991, p35
PC operating systems: Which will win? APR, 1991, p49
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p
Parallel processing in control; SEP, 1990, p41
Personal computer works in embedded applications; SEP, 1992, p92
Putting PC features on industrial bus; APR, 1992, p23
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71
Taking the mystery out of microcontroller selection—Pt. 1; AUG, 1991, p19
Taking the mystery out of microcontroller selection—Pt. 2; SEP, 1991, p55
When the going gets tough, industrial PCs keep going! MAY, 1990, p79

**INTEGRATED CIRCUITS**

Field programmable gate arrays cut costs, up performance; MAY, 1990, p67
Memory chip stores analog data; FEB, 1991, p81
Taking the mystery out of microcontroller selection—Pt. 1; AUG, 1991, p19
Taking the mystery out of microcontroller selection—Pt. 2; SEP, 1991, p55

**I/O**

A-B unveils new software and I/O, enhanced controllers and computers; APR, 1991, p109
Advanced I/O cuts costs, ups capabilities; DEC, 1992, p4
Choosing an I/O strategy for industrial applications; SEP, 1991, p29
Computer I/O: Something for every architecture; JUL, 1990, p35
Field to computer I/O modules establish a direct connection; JUL, 1990, p87
I/O boards take on system tasks; DEC, 1992, p25
I/O bricks provide high resolution and density; OCT, 1992, p123
I/O modules adapt to decentralized distributed control strategies; DEC, 1992, p19
I/O selection and application; DEC, 1991, p25
I/O technology update; DEC, 1991, p19
Intelligent modules: A smart way to link PLCs to the factory floor; JUL, 1990, p38
Networked, intelligent I/O for distributed control; DEC, 1992, p59
Programmable controller uses twisted-pair I/O network; JAN, 1991, p92
Smart sensors, fieldbus standard to change industrial I/O's role; JUL, 1990, p25
Smart single channel I/O saves dollars; JUL, 1990, p31
Smart transmitters make their move; JUN, 1990, p47

**ISO 9000**

That bomb's still ticking, folks!; JUN, 1992, p4
ISO 9000 provides extra benefits; JUN, 1992, p21
ISO 9000: A matter of survival; JUN, 1992, p43
ISO 9000 Roundtable—Pt. 2; JUL, 1992, p54
Taking the anxiety out of ISO 9000 registration; JUN, 1992, p52

**LOCAL AREA NETWORKS**

ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
Bitbus helps valve stem maker up product quality via SPC; FEB, 1990, p84
Bridging MAP to Ethernet; NOV, 1991, p57
Five-year growth in fiber optic backbone networks looks good; JAN, 1990, p91
High hopes for fiber optic LANs: FDDI makes its bid for control; DEC, 1990, p51
Industrial broadband networking comes of age; NOV, 1990, p57
LON chip: Building block for smart I/O; JUN, 1992, p71
MAP: A status report; NOV, 1991, p53
Networking motor controls and drives digitally; APR, 1990, p53
Networking software: A case for distributed systems; NOV, 1990, p31
New networking "kid" could be blockbuster; MAY, 1992, p25
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
Repeating history; AUG, 1992, p21
Smart sensors, fieldbus standard to change industrial I/O's role; JUL, 1990, p25

**MAINTENANCE**

Bus state analyzers save time; APR, 1991, p91
Monitoring system helps hydro plant avoid bearing repairs, downtime; APR, 1991, p104
State logic diagnostic system cuts fiber production downtime; MAR, 1991, p73
Technical services to see 130% growth; NOV, 1992, p4
The Changing face of process control service; NOV, 1992, p21

**MARKETING**

AI on the factory floor: Reality in the 90s? JAN, 1990, p90
Five-year growth in fiber optic backbone networks looks good; JAN, 1990, p91
Flow sensors: Coriolis sensors lead the market; JAN, 1990, p92
Market outlook '90; JAN, 1990, p85
Market outlook '91; JAN, 1991, p67
More computers will tackle total plant management; JAN, 1991, p67
New-age process control: Treating the process as a business; JAN, 1990, p85
Operator interfaces key to future; JAN, 1991, p67
Systems integration to grow 20%/year through '93; JAN, 1990, p87
U.S. demand for sensors and transducers reached $3.86 billion in 1990; JAN, 1991, p67
World PLC market to hit $5.5 billion; JAN, 1991, p67
World pressure sensor market to hit $4.5 billion; JAN, 1990, p93

**MOTION & POSITION CONTROL**

Applying proximity sensors—Pt. 1; SEP, 1991, p45
Applying proximity sensors—Pt. 2; OCT, 1991, p99
Brushless ac servo controller/motor family is modular and compact; APR, 1990, p111
Industrial computers provide flexible multiaxis motion control; JAN, 1992, p81
Linear scale improves accuracy; OCT, 1991, p132
New potentiometers reduce downtime, up production levels; MAY, 1990, p122
Pneumatics vs hydraulics for motion control; FEB, 1992, p55
Remote motion interface simplifies machine control; JUN, 1990, p106
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
Software key to flexible motion control; DEC, 1990, p57
Tackling a bear of a synchro control problem; JAN, 1990, p107
Tackling the servo vs stepper decision; MAY, 1991, p27
Using proxs to measure position; OCT, 1990, p95
Why ultrasonics for noncontact position sensing? APR, 1992, p39

**MOTOR CONTROLS & DRIVES**

Brushless servomotor and controller cut manufacturer's waste, setup time; NOV, 1991, p33
Disc motors offer high performance in a low-cost package; NOV, 1991, p25
Drives, programmable controllers up freezer maker's flexibility; MAY, 1992, p71
Motion Expo '92 comes to Boston; APR, 1992, p76
Servos: A good alternative to variable-speed drives; MAY, 1992, p59
Solid-state motor controllers solve pump surge problems; NOV, 1991, p29

**NEURAL NETWORKS**

Neural nets offer good solution to custom formulation; SEP, 1990, p37

**OPERATOR INTERFACES**

Case for video control panels; MAY, 1991, p69
Designing and integrating workstations into plant operations; MAY, 1990, p57
Developing an industrial OI terminal and workstation plan; JUL, 1990, p73
EL flat panels vs meters and CRTS; AUG, 1991, p45
Flat panels control heat-treat; JUL, 1992, p70
Good planning and flexible systems lead to successful automation; JUN, 1990, p77
Is there a flat panel in your future? MAY, 1992, p27
Mini-terminal is small and rugged, has companion controller; MAR, 1990, p90
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
Operator Workstations team up with PLCs for batch control; NOV, 1990, p53
Operator interface users demand high-tech simplicity; MAY, 1990, p41
Operator interfaces key to future; JAN, 1991, p67
Operator interfaces versus workstations; MAY, 1991, p53

PC OI tough to beat, sure to be pounded; MAY, 1992, p4
PLC/operator interface system cuts downtime at blowmolding plant; JAN, 1990, p103
Panel display/controller retrofit eases OI task, tightens control; OCT, 1990, p177
Selecting strip chart recorders; OCT, 1991, p137
Software brings simplicity and realism to industrial OIs; MAY, 1992, p37
Standard graphical user interfaces give OIs a common look and feel... MAY, 1990, p49
Text-based terminals: Tools worth a second look; MAY, 1992, p33
Today's DPMs: Meters and much more; AUG, 1991, p47
Touchscreen terminals ease data entry; JUL, 1992, p72
Touchscreens find a home in the factory; MAY, 1991, p59
Windows 3.0 and DDE help PCs move data around the plant floor; APR, 1991, p77
Windows 3.0, 68020 boost DCS productivity, enhance performance; OCT, 1991, p136
Windows software combines modeling, PLC code generation; OCT, 1991, p146
Workstation has GUI, mouse emulator ; APR, 1991, p111
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25
Workstations help control world's largest autoclave; SEP, 1990, p102

**OUTSIDE SERVICES AND SYSTEM INTEGRATION**

Buying technology can be difficult; MAR, 1991, p23
Choosing a DCS vendor: Make total quality the key qualification; OCT, 1990, p53
Manufacturing integration: Developing a cell control strategy—Pt. 1; OCT, 1990, p71
Manufacturing integration: Developing a cell control strategy—Pt. 2; NOV, 1990, p65
Project management: Software alone can't do the job; MAR, 1991, p57
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
Value-added distributors meld high technology and local service; OCT, 1991, p103
What a systems integrator can do; FEB, 1991, p49

**PACKAGING**

Combating heat and humidity in electronic enclosures; MAY, 1992, p49
Choosing a finish for your electronic enclosure package; MAY, 1990, p85

**PANEL DISPLAYS**

Case for video control panels; MAY, 1991, p69
EL flat panels vs meters, CRTS; AUG, 1991, p45
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
Is there a flat panel in your future? MAY, 1992, p27
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
Panel display/controller retrofit eases OI task, tightens control; OCT, 1990, p177
Solving problems with digital panel meters; FEB, 1990, p69

**pH**

Good pH measurements in bad process streams; DEC, 1990, p39
Meeting the sensor demands of the pharmaceutical industry; MAY, 1991, p34
Sensors that help fight water pollution; AUG, 1991, p41

**PHOTOELECTRICS**

Heading off problems in photoelectric applications; OCT, 1992, p43
Laser sensors pay off in accuracy; JUL, 1991, p51
Putting photoelectric devices to work in the real world; AUG, 1990, p39
Putting sensors to work in food; FEB, 1991, p23

**PNEUMATICS AND HYDRAULICS**

Pneumatics vs hydraulics for motion control; FEB, 1992, p55

**POLLUTION**

New EPA regulations focus on valve stem seal leakage; JAN, 1992, p63
Let's clear the air; FEB, 1992, p4
Preparing for new smokestack monitoring regulations; FEB, 1992, p47
Biosensing protects water quality, keeps paper mill in production; FEB, 1992, p78
On-line chromatography keeps tabs on wastewater pollutants; APR, 1992, p63
Staying ahead of new air pollution regulations; MAY, 1992, p65
Pollution: negatives and positives; JUL, 1992, p13
Monitoring toxic gases in factory air; AUG, 1992, p55
Firms appoint new pollution "bag holders"; NOV, 1992, p15
Upgrading your bubbler: Add on or install new? NOV, 1992, p59
Keeping workers safe from toxic gas exposure; DEC, 1992, p47

**POWER CONDITIONING**

Case for low-Z power conditioners; APR, 1991, p25
Three-phase automation systems need power conditioning, too!—Pt. 1; OCT, 1992, p49
Three-phase automation systems need power conditioning, too!—Pt. 2; NOV, 1992, p65

**PRINTERS AND PLOTTERS**

Applying strip chart recorders; OCT, 1991, p75
Need a hard copy of your measurement data? OCT, 1990, p75
Selecting strip-chart recorders; OCT, 1990, p99
Selecting strip chart recorders; OCT, 1991, p137

**PRODUCT FEATURES**

Batch operations software connects MIS with the plant floor; DEC, 1992, p58
Color workstations are rugged and AT-compatible; NOV, 1992, p72
Customer protection continues with TDC 3000 upgrade; FEB, 1992, p83
Device brings real-time data acquisition to workstations; APR, 1992, p88
I/O bricks provide high resolution and density; OCT, 1992, p123
Industrial workstations feature 50 MHz RISC chip; NOV, 1992, p74
Manufacturing automation strategy includes PLCs, communications; MAY, 1992, p76
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
Networked, intelligent I/O for distributed control; DEC, 1992, p59
New distributed control computer products feature open architecture; MAR, 1992, p79
New processor, new modules, new language enhance 984 line; MAR, 1992, p73
Personal computer works in embedded applications; SEP, 1992, p92
Programmable controller plugs into AT and EISA bus systems; SEP, 1992, p90

**PROGRAMMABLE CONTROLLERS**

A-B to announce controller products plus alliance at ISA/91; OCT, 1991, p147
A-B unveils new software and I/O, enhanced controllers and computers; APR, 1991, p109
AT module plugs into PLC backplane; MAR, 1991, p80
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
DCS, PLC aid chemical storage; OCT, 1991, p47
Drives, programmable controllers up freezer maker's flexibility; MAY, 1992, p71
Dual-processor PLC provides super-reliable machine control; NOV, 1990, p89
Evaporator control ups efficiency of electrogalvanizing plant; JUN, 1990, p96
Hardware/software simplifies elements of control; MAY, 1990, p131
High end PLC for machine control, supervisory applications; MAR, 1990, p92
Intelligent modules: A smart way to link PLCs to the factory floor; JUL, 1990, p38
Interface processor works with PLCs and DCSs; FEB, 1990, p86
Linked PLCs control mine equipment; JUN, 1990, p107
Loop and logic controllers solve several application problems; MAR, 1991, p86
Loop/logic controller improves output from 30-year-old rod mill furnace; OCT, 1991, p129
Manufacturing automation strategy includes PLCs, communications; MAY, 1992, p76
Micro PLC has big features; JAN, 1991, p88
New processor, new modules, new language enhance 984 line; MAR, 1992, p73
Operator Workstations team up with PLCs for batch control; NOV, 1990, p53
PLC helps solvent extraction process clean up Superfund site; MAY, 1990, p111
PLC improves asphalt production; NOV, 1990, p91
PLC meets casting machine's special safety needs; JUN, 1990, p91
PLC offers big system features for fewer dollars; APR, 1990, p108
PLC-based DCSs make the most of existing control equipment; OCT, 1990, p41
PLC-based SCADA system provides economical yet flexible control; OCT, 1990, p185
PLC-based system monitors and documents pollution abatement; FEB, 1991, p53
PLC/operator interface system cuts downtime at blowmolding plant; JAN, 1990, p103
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p99
PLCs and network speed infant formula production; JUN, 1991, p79
PLCs help flour mill double production; JUN, 1991, p77
PLCs, satellite control crude oil pipeline; SEP, 1991, p65
PLCs: Cornerstone of fiber plant's CIM installation; AUG, 1992, p33
PLCs: New challenges lie ahead; MAR, 1992, p25
PLCs: What's ahead? MAR, 1990, p37
PLCs: What's new? MAR, 1991, p25
Programmable controller plugs into AT and EISA bus systems; SEP, 1992, p90
Programmable controller uses twisted-pair I/O network; JAN, 1991, p92
Remote motion interface simplifies machine control; JUN, 1990, p106
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71
The cell controller in a PLC environment; AUG, 1990, p33
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61
Using PLCs in batch applications; JUN, 1990, p67
VMEbus PLC saves, programs easily; OCT, 1991, p134
World PLC market to hit $5.5 billion; JAN, 1991, p67

**SAFETY**

Guide to hazardous area classifications; NOV, 1990, p69
How to avoid thermocouple hazards; AUG, 1992, p61
Keeping workers safe from toxic gas exposure; DEC, 1992, p47
Selecting control valves with an eye towards safety; JAN, 1992, p67

**SCADA SYSTEMS**

From SCADA to multiuser management networks; NOV, 1992, p43

**SENSORS & TRANSDUCERS**

Applying proximity sensors—Pt. 1; SEP, 1991, p45
Applying proximity sensors—Pt. 2; OCT, 1991, p99
Biosensing protects water quality, keeps paper mill in production; FEB, 1992, p78
Capacitive prox switches help bakery increase productivity; JUN, 1990, p109
Choosing level measurement and control instruments; FEB, 1991, p35
Choosing temperature switches for fit and function; JUN, 1992, p35
Coriolis mass flowmeter is ready for the tough jobs; FEB, 1992, p25
Fabric producer solves cure-oven based quality control problem with IR; JUN, 1990, p35
Filter plant uses mass-flow leak testing; JUL, 1992,

I&CS
INSTRUMENTATION & CONTROL SYSTEMS

*This publication is included in a reference system from Information Access Company in one or more of the following formats:*

***CD-ROM microfilm online***

For information regarding availability of this publication in Information Access Company products, call toll free 800/227-8431 (U.S. only) or 415/378-5000 or send this form to:

*Information Access Co.*
*Rights & Permissions Department*
*362 Lakeside Drive*
*Foster City, CA 94404*

*Name*

*Company*

*Address*

*City*

*State/Country* *Zip*

*Phone*

*Name of publication*

Information Access COMPANY

p66
Flow sensors: Coriolis sensors lead the market; JAN, 1990, p92
Flowmeters: Accuracies are better, prices lower; FEB, 1990, p29
Good pH measurements in bad process streams; DEC, 1990, p39
Guide to flow measurement; FEB, 1990, p59
Guide to flow measurement; FEB, 1991, p63
Guide to flow measurement; FEB, 1992, p59
Handy temperature tables; JUN, 1990, p51
How to avoid thermocouple hazards; AUG, 1992, p61
How to select a temperature transmitter; JUN, 1992, p31
IR thermometer monitors pilot scale coater/laminator; JUN, 1990, p35
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
IR ups power station efficiency; JUN, 1990, p34
Infrared—A hot technology; JUN, 1990, p33
Laser sensors pay off in accuracy; JUL, 1991, p51
Level measurement: Pressure methods dominate; FEB, 1990, p35
Linear scale improves milling machine accuracy; OCT, 1991, p132
Line-scanning IR thermometers team up with powerful computers; JUN, 1991, p47
Magmeters tackle the tough tasks; FEB, 1992, p23
Magnetic displacement sensing lets you see inside housings; JUL, 1991, p29
Mass flow and density sensor tightens control of alumina extraction; DEC, 1991, p47
Measuring hot metals on the move; JUN, 1992, p25
Meeting the demands of tougher air pollution regulations; NOV, 1991, p47
Meeting the sensor demands of the pharmaceutical industry; MAY, 1991, p34
Model 1151 Smart Pressure Transmitter keeps getting better; OCT, 1991, p145
Monitoring toxic gases in factory air; AUG, 1992, p55
New calibrator helps flowmeter maker meet increased production demands; FEB, 1992, p67
New capacitance pressure sensor minimizes thermal effects; FEB, 1992, p41
New potentiometers reduce downtime, up production levels; MAY, 1990, p122
Pressure measurement: Small and accurate prevail; FEB, 1990, p41
Putting photoelectric devices to work in the real world; AUG, 1990, p39
Putting sensors to work in food processing; FEB, 1991, p23
Putting the pressure on pressure sensing technology; FEB, 1992, p35
Scanning IR thermometer makes multiple measurements at once; JUN, 1991, p82
Sensors allow utility to safely use tie lines to maximum capacity; APR, 1990, p106
Sensors series tackles the tough tasks; AUG, 1991, p4
Sensors that help fight water pollution; AUG, 1991, p41
Smart IR sensors improve product quality, process efficiencies; JUN, 1991, p43
Smart pressure transmitters: A technology update; FEB, 1991, p39
Smart sensors meet today's more demanding control needs; AUG, 1990, p45
Smart sensors, fieldbus standard to change industrial I/O's role; JUL, 1990, p25
Sorting out liquid level sensors; FEB, 1992, p31
Specifying and installing presence sensors: Some dos and don'ts; NOV, 1990, p44
System thermometer for process measurements and RTD calibration; JUN, 1991, p81
The impact of new technology on sensors for control; FEB, 1990, p55
Thermocouples vs RTDs: The battle continues; JUN, 1990, p43
Today's noncontact sensors do a whole lot more; MAY, 1990, p73
U.S. demand for sensors and transducers reached $3.86 billion in 1990; JAN, 1991, p67
Upgrading your bubbler: Add on or install new? NOV, 1992, p59
Using proximity sensors to measure position; OCT, 1990, p95
Why ultrasonics for noncontact position sensing? APR, 1992, p39
World pressure sensor market tc hit $4.5 billion by '95; JAN, 1990, p93

**SERIES**

BUS COMPATIBLE BOARDS
- Part 5: 25 Integrating VME and VXI; MAR, 1990, p25
- Part 6: Do you really need 32 bits? JUN, 1990, p63
- Part 7a: STD bus handles I/O tasks for Multibus II; SEP, 1990, p56
- Part 7b: Applying the PC/AT architecture and to Multibus II; SEP, 1990, p61
- Part 7c: Embedded PCs: Design the application, not the computer; SEP, 1990, p77
- Part 8: Software issues for bus boards: Check the operating system first! DEC, 1990, p45
- Part 9: Multiprocessing on high-end bus architectures; JAN, 1991, p57
- Part 10: Bus state analyzers save time; APR, 1991, p91
- Part 11: Fiber optic bus links: A new option for remote data acquisition; JUL, 1991, p67
- Part 12: SCSI moves into the factory; OCT, 1991, p71

CONTROL SOFTWARE
- Part 1: Object oriented programming cuts development time, boosts reliability; MAR, 1991, p53
- Part 2a: Standardized software drivers: A plus to some, negative to others; JUN, 1991, p67
- Part 2b: Users and vendors wary of standard; JUN, 1991, p68
- Part 2c: Standard could bring sacrifices, but more benefits; JUN, 1991, p69
- Part 2d: Connectivity should be a hardware design hardware design criterion; JUN, 1991, p70
- Part 2e: Proprietary standards: another way; JUN, 1991, p70
- Pat 2f: Standard drivers could eliminate numerous obstacles; JUN, 1991, p71
- Part 3: Relational database: Backbone of CIM; SEP, 1991, p39
- Part 4: Make sure that enabler is enabling; DEC, 1991, p39
- Part 5: Fuzzy logic smooths system control; MAR, 1992, p45
- Part 6: Windows 3.1: Ready for industrial action? JUN, 1992, p61
- Part 7a: Interconnecting applications via a common file format; SEP, 1992, p71
- Part 7b: Windows' DDE: One solution to reliable data exchange; NOV, 1992, p47
- Part 8: Upgrades give software solutions longevity; DEC, 1992, p53

ISO 9000
- ISO 9000: A matter of survival; JUN, 1992, p43
- Taking the anxiety out of ISO 9000 registration; JUN, 1992, p52
- ISO 9000 Roundtable, part 2; JUL, 1992, p54

MOTOR CONTROLS/DRIVES
- Part 5: Variable speed drives: What's new? JAN, 1990, p51
- Part 6: Networking motor controls and drives digitally; APR, 1990, p53
- Part 7: Engineering standards that impact motor control design and selection; JUL, 1990, p69
- Part 8a: Digital adjustable-speed drives up throughput and productivity; OCT, 1990, p97
- Part 8b: Adjustable ac drives affect range of performance variables; OCT, 1990, p111
- Part 8c: Variable speed motor controls give printers precise exposures; OCT, 1990, p114
- Part 8d: Ford's high-speed LIM conveyor: A demanding controls task; OCT, 1990, p137

SENSORS
- Part 1: The impact of new technology on sensors for control; FEB, 1990, p55
- Part 2: Today's noncontact sensors do a whole lot more; MAY, 1990, p73
- Part 3: Smart sensors meet today's more de-

manding control needs; AUG, 1990, p45
- Part 4: Specifying and installing presence sensors: Some dos and don'ts; NOV, 1990, p44
- Part 5: Putting sensors to work in food processing; FEB, 1991, p23
- Part 6: Meeting the sensor demands of the pharmaceutical industry; MAY, 1991, p34
- Part 7: Sensors that help fight water pollution; AUG, 1991, p41
- Part 8: Meeting the demands of tougher air pollution regulations; NOV, 1991, p47
- Part 9: Preparing for new smokestack monitoring regulations; FEB, 1992, p47
- Part 10: Staying ahead of new air pollution regulations; MAY, 1992, p65
- Part 11: Monitoring toxic gases in factory air; AUG, 1992, p55
- Part 12: Upgrading your bubbler: Add on or install new? NOV, 1992, p59

SYSTEM INTEGRATION
- Part 1: Organizing in-house systems integration projects; JAN, 1992, p45
- Part 2: Finding the right systems integrator; APR, 1992, p67
- Part 3: Selecting operator training services; JUL, 1992, p63
- Part 4a: Getting cost-effective, long-term technical support; OCT, 1992, p117
- Part 4b: How to get the most out of long-term technical support; DEC, 1992, p45

## SERVOS

Servos: A good alternative to variable-speed drives; MAY, 1992, p59

## SHOWS

Aisle-by-aisle guide to ISA/91; OCT, 1991, p110
Buscon/90 West; JAN, 1990, p97
Buscon/91-West to draw 150 exhibitors; JAN, 1991, p87
Control Expo '90; MAY, 1990, p91
Electro/90 show preview; APR, 1990, p91
Electro/92 to draw 20,000 visitors; MAY, 1992, p75
Electro/International to draw 25,000; APR, 1991, p103
Guide to Control Expo '91; MAY, 1991, p89
Guide to IPC'91; MAR, 1991, p65
Guide to Sensors Expo '92; SEP, 1992, p83
Guide to Sensors Expo West; FEB, 1991, p61
I&CS exhibit guide to IPC '92; MAR, 1992, p53
IPC '92 to draw 25,000 attendees; MAR, 1992, p51
IPC'90; MAR, 1990, p69
ISA/90; OCT, 1990, p141
ISA/91 to draw 580+ exhibitors; OCT, 1991, p107
ISA/92-Canada to draw 10,000; APR, 1992, p74
Motion Expo '92 comes to Boston; APR, 1992, p76
National Manufacturing Week to draw 50,000 visitors; FEB, 1992, p71
Program/Product Guide to ISA/92; OCT, 1992, p89
Robots & Vision Automation Show; MAY, 1990, p89
Sensors Expo '91 to showcase wider range of products; SEP, 1991, p59
Sensors Expo West '92; APR, 1992, p71
Sensors Expo West; FEB, 1990, p67
Sensors Expo; AUG, 1990, p53
Wescon/90; NOV, 1990, p74
Wescon/91 to draw 1300 exhibitors; NOV, 1991, p52
Wescon/92; NOV, 1992, p6

## SIGNAL CONDITIONERS

Good signal conditioning practices—Pt. 1; MAY, 1991, p85
Good signal conditioning practices—Pt. 2; JUN, 1991, p61
Today's signal conditioners do more than clean up signals; MAY, 1992, p53
Signal conditioners: Getting the most for your money; SEP, 1992, p65

## SOFTWARE

A case against DOS-based PCs in control; APR, 1992, p29
A-B unveils new software and I/O, enhanced controllers and computers; APR, 1991, p109
Application software selection: Ten rules of the road to CIM; NOV, 1990, p25
Batch operations software connects MIS with the plant floor; DEC, 1992, p58
Bridging MAP to Ethernet; NOV, 1991, p57
Control software downloads applications to network nodes; MAR, 1991, p77
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
Fuzzy logic smooths system control; MAR, 1992, p45
GM builds competitiveness on open systems and strategic alliances; AUG, 1992, p29
Industrial PC software: The driving force is openness; APR, 1990, p41
Integrating PLCs and DCSs via a computer and relational database; JUN, 1992, p79
Interconnecting applications via a common file format; SEP, 1992, p71
Is 2.0 greater than 3.1? SEP, 1992, p35
LabWindows 2.0 extends DOS for test and measurement applications; DEC, 1990, p70
Mac software gets DOS counterpart; JAN, 1990, p118
Make sure that enabler is enabling; DEC, 1991, p39
Monitoring system cuts calibration costs at nuclear power station; JUN, 1990, p83
Networking software: A case for distributed systems; NOV, 1990, p31
Object oriented programming cuts development time, boosts reliability; MAR, 1991, p53
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
Off-the-shelf software controls complex workcell; AUG, 1990, p67
PC operating systems: Which will win? APR, 1991, p49
Relational database: Backbone of CIM; SEP, 1991, p39
Saturn Corp. finds MMS key to flexible CIM development; AUG, 1992, p23
Software brings simplicity and realism to industrial OIs; MAY, 1992, p37
Software is key to flexible motion control; DEC, 1990, p57
Software issues for bus boards: Check the operating system first! DEC, 1990, p45
Software links processing and business operations and decisions; NOV, 1990, p87
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71
Software products support process and manufacturing industries; SEP, 1990, p107
Software: The new hardpan of control; MAR, 1992, p4
Standard drivers could eliminate numerous obstacles; JUN, 1991, p71
Standard could bring sacrifices, but more benefits; JUN, 1991, p69
Standardized software drivers: A plus to some, negative to others; JUN, 1991, p67
Survival at IBM Toronto: Flexibility is key to global competitiveness; AUG, 1992, p45
Take the bus...and leave driving to us; APR, 1992, p33
Upgrades give software solutions longevity; DEC, 1992, p53
Users and vendors wary of standard; JUN, 1991, p68
Using software for process control; OCT, 1990, p87
Windows 3.0 and DDE help PCs move data around the plant floor; APR, 1991, p77
Windows 3.1: Ready for industrial action? JUN, 1992, p61
Windows software combines modeling, PLC code generation; OCT, 1991, p146
Windows' DDE: One solution to reliable data exchange; NOV, 1992, p47
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25

## SPEECH RECOGNITION

Speech recognition: A good choice for real-time control; APR, 1992, p59

## STATISTICAL PROCESS CONTROL

Bitbus helps valve stem maker up product quality via SPC; FEB, 1990, p84
Statistical process control for the chemical and petroleum industries; DEC, 1990, p23
Practical approach to SPC/SQC; DEC, 1990, p29

## SYSTEMS INTEGRATION

It's time to roll up your sleeves...again!; JAN, 1992, p4
Organizing in-house systems integration projects; JAN, 1992, p45
Systems integrators come in four flavors; FEB, 1992, p21
Finding the right systems integrator; APR, 1992, p67
Getting cost-effective, long-term technical support; OCT, 1992, p117

## TECHNICAL SERVICES

Getting cost-effective, long-term technical support; OCT, 1992, p117
How to get the most out of long-term technical support; DEC, 1992, p45
Selecting operator training services; JUL, 1992, p63
Technical services to see 130% growth; NOV, 1992, p4
The Changing face of process control service; NOV, 1992, p21
Ongoing training: An investment in continuous improvement; NOV, 1992, p23
Risk management: A service that can prevent disasters; NOV, 1992, p33

## TEMPERATURE

Acoustic pyrometry ups boiler efficiencies; JUN, 1991, p35
Choosing temperature switches for fit and function; JUN, 1992, p35
Computer helps system keep close tabs on boiler temperatures; DEC, 1992, p61
Fabric producer solves cure-oven based quality control problem with IR; JUN, 1990, p35
Handy temperature tables; JUN, 1990, p51
How to avoid thermocouple hazards; AUG, 1992, p61
How to select a temperature transmitter; JUN, 1992, p31
IR thermometer monitors pilot scale coater/laminator; JUN, 1990, p35
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
IR ups power station efficiency; JUN, 1990, p34
IR—A hot technology; JUN, 1990, p33
Line-scanning IR thermometers team up with powerful computers; JUN, 1991, p47
Measuring hot metals on the move; JUN, 1992, p25
PC-based DAS helps memory maker profile temperatures; APR, 1992, p79
Scanning IR thermometer makes multiple measurements at once; JUN, 1991, p82
Smart IR sensors improve product quality, process efficiencies; JUN, 1991, p43
System thermometer for process measurements and RTD calibration; JUN, 1991, p81
Temperature controllers are getting smaller and better; JUN, 1991, p27
Thermocouples vs RTDs: The battle continues; JUN, 1990, p43

## TERMINALS, COMPUTER

Text-based terminals: Tools worth a second look; MAY, 1992, p33

## TEST & INSPECTION

Bitbus helps valve stem maker up product quality via SPC; FEB, 1990, p84
Bus state analyzers save time; APR, 1991, p91
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Laser sensors pay off in accuracy; JUL, 1991, p51
Magnetic displacement sensing lets you see inside housings; JUL, 1991, p29
Monitoring system helps hydro plant avoid bearing repairs, downtime; APR, 1991, p104
Practical approach to SPC/SQC; DEC, 1990, p29
Statistical process control for the chemical and petroleum industries; DEC, 1990, p23
Vision systems focus on color, motion; JUL, 1991, p21
What line scan vision systems can do for you; MAY, 1991, p78

## TRANSMITTERS
How to select a temperature transmitter; JUN, 1992, p31
Model 1151 Smart Pressure Transmitter keeps getting better; OCT, 1991, p145
Smart pressure transmitters; FEB, 1991, p39
Smart transmitters get smarter; SEP, 1992, p77

## ULTRASONICS
Why ultrasonics for noncontact position sensing? APR, 1992, p39

## UNINTERRUPTIBLE POWER SYSTEMS
Ferroresonant UPS systems help Ford conduct crash tests; JAN, 1990, p115
Selecting a UPS for industrial control applications; OCT, 1990, p61

## VALVES
Electrohydraulic valve actuators improve gas turbine fuel control; SEP, 1991, p71
Fifteenth annual control valve update; JAN, 1991, p63
Fourteenth annual control valve update; JAN, 1990, p45
New EPA regulations focus on valve stem seal leakage; JAN, 1992, p63
Reduce solenoid valve power drain; MAR, 1990, p59
Selecting control valves with an eye towards safety; JAN, 1992, p67

## VISION SYSTEMS
Parts tracking starts with character recognition; MAY, 1990, p101
Machine vision systems are "lookin' good"; NOV, 1990, p76
Vision systems focus on color, motion; JUL, 1991, p21
What line scan vision systems can do for you; MAY, 1991, p78

## VISCOSITY
Better viscosity control yields better circuit boards; DEC, 1990, p65

## WIRING
A cable isn't a cable isn't a cable! SEP, 1990, p84

## WORKSTATIONS
Case for video control panels; MAY, 1991, p69
Color workstations are rugged and AT-compatible; NOV, 1992, p72
Designing and integrating workstations into plant operations; MAY, 1990, p57
Developing an industrial OI terminal and workstation plan; JUL, 1990, p73
Device brings real-time data acquisition to workstations; APR, 1992, p88
Industrial workstations feature 50 MHz RISC chip; NOV, 1992, p74
Operator interfaces versus workstations; MAY, 1991, p53
Operator Workstations team up with PLCs for batch control; NOV, 1990, p53
Touchscreens find a home in the factory; MAY, 1991, p59
Workstation has GUI, mouse emulator ; APR, 1991, p111
Workstations help control world's largest autoclave; SEP, 1990, p102
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25

# TITLES

A-B to announce controller products plus alliance at ISA/91; OCT, 1991, p147
A-B unveils new software and I/O, enhanced controllers and computers; APR, 1991, p109
AI on the factory floor: Hot topic in the '80s...reality in the 90s? JAN, 1990, p90
ARCNET helps acquire data for expert system in steel plant; JUN, 1990, p111
AT module plugs into PLC backplane; MAR, 1991, p80
Acoustic pyrometry ups boiler efficiencies; JUN, 1991, p35
Adjustable ac drives affect range of performance variables; OCT, 1990, p111
Advanced I/O cuts costs, ups capabilities; DEC, 1992, p4
Aisle-by-aisle guide to ISA/90; OCT, 1990, p144
Aisle-by-aisle guide to ISA/91; OCT, 1991, p110
Aisle-by-aisle guide to Sensors Expo; AUG, 1990, p56
An ignored standard!; Sep, 1992, p21
Annunciator helps prevent costly damage in semiconductor plant; AUG, 1990, p64
Another way to lose advantage; DEC, 1991, p13
Application software selection: Ten rules of the road to CIM; NOV, 1990, p25
Applying proximity sensors—Pt. 1; SEP, 1991, p45
Applying proximity sensors—Pt. 2; OCT, 1991, p99
Applying strip chart recorders; OCT, 1991, p75
Applying the PC/AT architecture to Multibus II; SEP, 1990, p61
BITBUS: A good choice for the factory floor; JUN, 1991, p73
Batch operations software connects MIS with the plant floor; DEC, 1992, p58
Better viscosity control yields better circuit boards; DEC, 1990, p65
Bigler, David, of Johnson Yokogawa; An exclusive interview with; OCT, 1992, p85
Biosensing protects water quality, keeps paper mill in production; FEB, 1992, p78
Bitbus helps valve stem maker up product quality via SPC; FEB, 1990, p84
Bridging MAP to Ethernet; NOV, 1991, p57
Brushless ac servo controller/motor family is modular and compact; APR, 1990, p111
Brushless servomotor and controller cut manufacturer's waste, setup time; NOV, 1991, p33
Bus state analyzers save time; APR, 1991, p91
Buscon/90 West has February opening; JAN, 1990, p97
Buscon/91-West to draw 150 exhibitors; JAN, 1991, p67
Buying technology can be difficult; MAR, 1991, p23
CIM: business results, not information; AUG, 1992, p4
CMI: The new goal of cell control; AUG, 1990, p27
Cable isn't a cable isn't a cable! SEP, 1990, p84
Calibration ups accuracy and profits; JAN, 1992, p73
Capacitive prox switches help bakery increase productivity; JUN, 1990, p109
Case against DOS-based PCs in control; APR, 1992, p29
Case for low-impedance power conditioners; APR, 1991, p25
Case for video control panels; MAY, 1991, p69
Case of too much of a good thing; JAN, 1991, p21
Change: Make it to your advantage; DEC, 1992, p15
Changing face of process control service; NOV, 1992, p21
Choosing a DCS vendor: Make total quality the key qualification; OCT, 1990, p53
Choosing a computer platform for data acquisition applications; JAN, 1991, p31
Choosing a finish for your electronic enclosure package; MAY, 1990, p85
Choosing an I/O strategy for industrial applications; SEP, 1991, p29
Choosing level measurement and control instruments; FEB, 1991, p35
Choosing temperature switches for fit and function; JUN, 1992, p35
Client-server systems in manufacturing; SEP, 1991, p23
Color workstations are rugged and AT-compatible; NOV, 1992, p72
Combating heat and humidity in electronic enclosures; MAY, 1992, p49
Computer I/O: Something for every architecture; JUL, 1990, p35
Computer helps system keep close tabs on boiler temperatures; DEC, 1992, p61
Computerized telemetry system at utility saves water, improves service; NOV, 1990, p93
Computerizing maintenance expertise; MAR, 1990, p63
Connectivity should be a hardware design criterion; JUN, 1991, p70
Control Expo '90 to draw 140+ exhibitors; MAY, 1990, p91
Control software downloads applications to network nodes; MAR, 1991, p77
Control starts with good input; MAY, 1990, p37
Control system handles 197 million gallons of wastewater/day; APR, 1990, p101
Control system upgrades steel plant's reheat performance; MAY, 1990, p125
Controller and gas sensors clean up organic wastes; OCT, 1990, p181
Controller cuts woodworking machinery's setup time; MAY, 1992, p74
Coprocessor turns PLC into efficient database handler; JAN, 1991, p79
Coriolis mass flowmeter is ready for the tough jobs; FEB, 1992, p25
Cost of ownership: a competitive tool; FEB, 1990, p27
Customer protection continues with TDC 3000 upgrade; FEB, 1992, p83
DAS PC boards provide automatic calibration and configuration; MAR, 1990, p88
DAS speeds electroplating process improvements; JAN, 1990, p99
DAS users demand more; JAN, 1992, p15
DCS ball is in the user's court; OCT, 1991, p4
DCS front end gets enhancements, including a new processor; MAY, 1990, p129
DCS technology update; OCT, 1991, p27
DCS's newest generation inspired by customers; AUG, 1990, p72
DCS's on-line information improves resin process consistency; NOV, 1991, p63
DCS, PLC aid chemical storage; OCT, 1991, p47
DCS-based emissions monitor is flexible, easy to maintain; OCT, 1991, p33
DCSs: Here to stay, but changing; MAR, 1992, p21
DNC system speeds production of optics tooling at Polaroid; JUL, 1991, p73
Data acquisition developers overcome Windows' limitations; DEC, 1992, p41
Data acquisition network manages flood of information at dam; JUN, 1990, p103
Data acquisition system eases process development task; FEB, 1990, p73
Data acquisition: User demands change system offerings; JAN, 1990, p31
Data logger helps steel maker maximize production efficiency; OCT, 1992, p121
Davis, Don, of Allen-Bradley; an exclusive interview with; OCT, 1990, p67
Dear Mr. President and Congress; JAN, 1992, p13
Designing and integrating workstations into plant operations; MAY, 1990, p57
Developing an industrial OI terminal and workstation plan; JUL, 1990, p73
Device brings real-time data acquisition to workstations; APR, 1992, p88
Digital adjustable-speed drives up throughput and productivity; OCT, 1990, p97
Disc motors offer high performance in a low-cost package; NOV, 1991, p25
Distributed control: Another way to go; OCT, 1992, p35
Distributed control: Capabilities merge, communications open up; OCT, 1990, p30
Distributed, open architecture system installs fast, ups flexibility; NOV, 1992, p69
Distributor/manufacturers rep index; MAR, 1992, p88
Do you really need a 32-bit bus? JUN, 1990, p63
Doing the right thing isn't easy; OCT, 1990, p27
Don't let EMI negate the power of today's faster control systems; JAN, 1992, p23
Drives, programmable controllers up freezer maker's flexibility; MAY, 1992, p71
Dual-processor PLC provides super-reliable machine control; NOV, 1990, p89
EISA solution to plant floor integration; SEP, 1992, p31
EL flat panels vs meters and CRTS; AUG, 1991, p45

Electro/90 show preview; APR, 1990, p91
Electro/92 to draw 20,000 visitors; MAY, 1992, p75
Electro/International to draw 25,000; APR, 1991, p103
Electrohydraulic drives offer high power, precise positioning; AUG, 1991, p33
Electrohydraulic valve actuators improve gas turbine fuel control; SEP, 1991, p71
Embedded PCs: Design the application, not the computer; SEP, 1990, p77
Embedded VXIbus computers are AT and Mac compatible; MAY, 1990, p134
Engineering standards that impact motor control selection; JUL, 1990, p69
Enhanced STD 32 provides even higher performance; JUL, 1992, p21
Evaporator control ups efficiency of electrogalvanizing plant; JUN, 1990, p96
Even computers are talent driven; Nov, 1991, p4
Fabric producer solves cure-oven based quality control problem with IR; JUN, 1990, p35
Fault-tolerant personal computers safeguard critical applications; SEP, 1992, p23
Ferroresonant UPS systems help Ford conduct crash tests; JAN, 1990, p115
Fiber optic bus links: A new option for remote data acquisition; JUL, 1991, p67
Fiber optic cables go the distance in tough environments; AUG, 1992, p67
Field programmable gate arrays cut costs, up performance; MAY, 1990, p67
Field to computer I/O modules establish a direct connection; JUL, 1990, p87
Fieldbus standard: We need a winner! OCT, 1992, p29
Fieldbus standardization: Another way; MAR, 1991, p49
Fifteenth annual control valve update; JAN, 1991, p63
Filter plant uses mass-flow leak testing; JUL, 1992, p66
Finally, a bright light at the end of the tunnel; OCT, 1992, p15
Finding the right systems integrator; APR, 1992, p67
Fine tuning data acquisition; JAN, 1991, p23
Firms appoint new pollution "bag holders"; NOV, 1992, p15
Five-year growth in fiber optic backbone networks looks good; JAN, 1990, p91
Flat panels control heat-treat; JUL, 1992, p70
Flow sensors: Coriolis sensors lead the market; JAN, 1990, p92
Flowmeters: Accuracies are better, prices lower; FEB, 1990, p29
Ford's high-speed LIM conveyor: A demanding controls task; OCT, 1990, p137
Fourteenth annual control valve update; JAN, 1990, p45
Free wasn't free... NOV, 1990, p21
From SCADA to multiuser management networks; NOV, 1992, p43
Fuzzy logic smooths system control; MAR, 1992, p45
GM builds competitiveness on open systems and strategic alliances; AUG, 1992, p29
Getting cost-effective, long-term technical support; OCT, 1992, p117
Getting transducers to talk to digital computers—Pt. 2; NOV, 1991, p43
Getting transducers to talk to digital computers—Pt. 1; OCT, 1991, p57
Global quality, or else!; MAY, 1991, p25
Good pH measurements in bad process streams; DEC, 1990, p39
Good planning and flexible systems lead to successful automation; JUN, 1990, p77
Good signal conditioning practices—Pt. 1; MAY, 1991, p85
Good signal conditioning practices—Pt. 2; JUN, 1991, p61
Ground loops: Causes and cures; DEC, 1991, p43
Guide to Control Expo '91; MAY, 1991, p89
Guide to IPC'91; MAR, 1991, p65
Guide to Sensors Expo '92; SEP, 1992, p83
Guide to Sensors Expo West; FEB, 1991, p61
Guide to flow measurement; FEB, 1990, p59
Guide to flow measurement; FEB, 1991, p63
Guide to flow measurement; FEB, 1992, p59
Guide to hazardous area classifications; NOV, 1990, p69
Handy temperature tables; JUN, 1990, p51
Hardware/software simplifies elements of control; MAY, 1990, p131
Heading off problems in photoelectric applications; OCT, 1992, p43
Help, help, who has the answers?; AUG, 1991, p15
High end PLC for machine control, supervisory applications; MAR, 1990, p92
High hopes for fiber optic LANs: FDDI makes its bid for control; DEC, 1990, p51
High-performance connectors handle high-speed digital demands; AUG, 1992, p64
How to avoid thermocouple hazards; AUG, 1992, p61
How to get the most out of long-term technical support; DEC, 1992, p45
How to select a temperature transmitter; JUN, 1992, p31
Hurd, Ed, of Honeywell; An exclusive interview with; MAR, 1990, p55
I&CS exhibit guide to IPC '92; MAR, 1992, p53
I&CS/IAN DOUBLE BONUS LIT; DEC, 1991, p27A
I/O boards take on system tasks; DEC, 1992, p25
I/O bricks provide high resolution and density; OCT, 1992, p123
I/O modules adapt to decentralized distributed control strategies; DEC, 1992, p19
I/O technology update; DEC, 1991, p19
IPC '92 to draw 25,000 attendees; MAR, 1992, p51
IPC'90 adds sessions on industrial process control; MAR, 1990, p69
IR thermometer monitors pilot scale coater/laminator; JUN, 1990, p35
IR thermometer's graphic display provides real-time and trending data; APR, 1991, p113
IR ups power station efficiency; JUN, 1990, p34
IR—A hot technology; JUN, 1990, p33
ISA/90 to draw more than 650 exhibitors, 25,000 visitors; OCT, 1990, p141
ISA/91 to draw 580+ exhibitors; OCT, 1991, p107
ISA/92-Canada to draw 10,000; APR, 1992, p74
ISO 9000 Roundtable—Pt. 2; JUL, 1992, p54
ISO 9000 provides extra benefits; JUN, 1992, p21
ISO 9000: A matter of survival; JUN, 1992, p43
Increasing uptime, yield with CIM; MAR, 1990, p81
Industrial workstations feature 50 MHz RISC chip; NOV, 1992, p74
Industrial PC hardware: No end to advancements in sight; APR, 1990, p33
Industrial PC software: The driving force is openness; APR, 1990, p41
Industrial broadband networking comes of age; NOV, 1990, p57
Industrial computers offer more power for less money; SEP, 1990, p28
Industrial computers provide flexible multiaxis motion control; JAN, 1992, p81
Industrial computers; SEP, 1992, p4
Industrial relays are alive and well! JUL, 1991, p61
Integrated approach to machine control; AUG, 1991, p28
Integrated cell control ups efficiency of plastics processing system; SEP, 1990, p99
Integrated computers make short work of compression brake testing; FEB, 1991, p79
Integrating PLCs and DCSs via a computer and relational database; JUN, 1992, p79
Integrating VME and VXI; MAR, 1990, p25
Intelligent host bus adapters increase SCSI-2 bus performance; MAR, 1992, p41
Intelligent modules: A smart way to link PLCs to the factory floor; JUL, 1990, p38
Interconnecting applications via a common file format; SEP, 1992, p71
Interface processor works with PLCs and DCSs; FEB, 1990, p86
Is 2.0 greater than 3.1? SEP, 1992, p35
Is there a flat panel in your future? MAY, 1992, p27
It's time to roll up your sleeves...again!; JAN, 1992, p4
Keep those letters coming!; SEP, 1991, p4
Keeping safe from toxic gas exposure; DEC, 1992, p47
LON chip: Building block for smart I/O; JUN, 1902, p71
LabWindows 2.0 extends DOS for test and measurement applications; DEC, 1990, p70
Laptop moves into industrial jobs; SEP, 1992, p55
Laser sensors pay off in accuracy; JUL, 1991, p51
Let the problem determine the solution; APR, 1991, p23
Let's clear the air; FEB, 1992, p4
Letter drives feature on software drivers; JUN, 1991, p4
Level measurement: Pressure methods dominate; FEB, 1990, p35
Line-scanning IR thermometers team up with powerful computers; JUN, 1991, p47
Linear scale improves milling machine accuracy; OCT, 1991, p132
Linked PLCs control mine equipment; JUN, 1990, p107
Lists don't get the job done; NOV, 1991, p23
Loop and logic controllers solve several application problems; MAR, 1991, p86
Loop/logic controller improves output from 30-year-old rod mill furnace; OCT, 1991, p129
MAP: A status report; NOV, 1991, p53
Mac software gets DOS counterpart; JAN, 1990, p118
Machine vision systems are "lookin' good"; NOV, 1990, p76
Macintosh controls composite material manufacturing process; MAR, 1990, p85
Magmeters tackle the tough tasks; FEB, 1992, p23
Magnetic displacement sensing lets you see inside housings; JUL, 1991, p29
Make sure that enabler is enabling; DEC, 1991, p39
Manufacturing automation strategy includes PLCs, communications; MAY, 1992, p76
Manufacturing integration: Developing a cell control strategy—Pt. 1; OCT, 1990, p71
Manufacturing integration: Developing a cell control strategy—Pt. 2; NOV, 1990, p65
Market outlook '90; JAN, 1990, p85
Market outlook '91; JAN, 1991, p67
Mass flow and density sensor tightens control of alumina extraction; DEC, 1991, p47
Measuring hot metals on the move; JUN, 1992, p25
Meeting the demands of tougher air pollution regulations; NOV, 1991, p47
Meeting the sensor demands of the pharmaceutical industry; MAY, 1991, p34
Memory chip stores analog data in analog form; FEB, 1991, p81
Micro PLC has big features; JAN, 1991, p88
Mini-terminal is small and rugged, has companion controller; MAR, 1990, p90
Minicomputer technology: Where it's been, where it's headed; DEC, 1991, p31
Model 1151 Smart Pressure Transmitter keeps getting better; OCT, 1991, p145
Model predictors: The first smart controllers; SEP, 1991, p49
Modern digital data converters are fast and affordable; APR, 1990, p87
Modular industrial computer features color VGA flat panel display; APR, 1992, p86
Monitoring system cuts calibration costs at nuclear power station; JUN, 1990, p83
Monitoring system helps hydro plant avoid bearing repairs, downtime; APR, 1991, p104
Monitoring toxic gases in factory air; AUG, 1992, p55
More computers will tackle total plant management; JAN, 1991, p67
Motion Expo '92 comes to Boston; APR, 1992, p76
Motivation: Not always a matter of money; APR, 1990, p31
Multiloop controllers become multifunctional; AUG, 1992, p51
Multiprocessing on high-end buses; JAN, 1991, p57
National Mfg Week returns to Chicago; FEB, 1992, p71

Need a hard copy of your measurement data? OCT, 1990, p75
Networked single-loop controllers: A low-cost way to increase flexibility; MAR, 1992, p 67
Networked, intelligent I/O for distributed control; DEC, 1992, p59
Networking motor controls and drives digitally; APR, 1990, p53
Networking multiple processors increases computing speed; SEP, 1990, p47
Networking software: A case for distributed systems; NOV, 1990, p31
Neural nets offer good solution to custom formulation; SEP, 1990, p37
New EPA regulations focus on valve stem seal leakage; JAN, 1992, p63
New calibrator helps flowmeter maker meet increased production demands; FEB, 1992, p67
New capacitance pressure sensor minimizes thermal effects; FEB, 1992, p41
New distributed control computer products feature open architecture; MAR, 1992, p79
New networking "kid" could be blockbuster; MAY, 1992, p25
New on-line process analyzers expand NIR capabilities; APR, 1991, p99
New potentiometers reduce downtime, up production levels; MAY, 1990, p122
New processor, new modules, new language enhance 984 line; MAR, 1992, p73
New processors and capabilities keep the STD bus alive and well; JUL, 1992, p15
New techniques simplify A/D conversions; APR, 1990, p59
New-age process control: Treating the process as a business; JAN, 1990, p85
NuBus 92 expands original specification; JUL, 1992, p23
Object oriented programming cuts development time, boosts reliability; MAR, 1991, p53
Off-the-shelf PC software, hardware save money, development time; MAY, 1990, p105
Off-the-shelf software controls complex workcell; AUG, 1990, p67
Off-the-shelf software ups tannery's product quality; FEB, 1992, p73
On-line chromatography keeps tabs on wastewater pollutants; APR, 1992, p63
On-line titro-analyzer cuts Kodak's product development costs; APR, 1990, p93
Ongoing training: An investment in continuous improvement; NOV, 1992, p23
Only engineers need apply...; APR, 1992, p15
Open solutions: Are you locked out? OCT, 1992, p23
Open systems offer smooth migration; AUG, 1992, p70
Operator Workstations team up with PLCs for batch control; NOV, 1990, p53
Operator interface users demand high-tech simplicity; MAY, 1990, p41
Operator interfaces key to future; JAN, 1991, p67
Operator interfaces versus workstations; MAY, 1991, p53
Organizing in-house systems integration projects; JAN, 1992, p45
PC OI tough to beat, sure to be pounded; MAY, 1992, p4
PC hardware takes on the mainframes; APR, 1991, p35
PC operating systems: Which will win? APR, 1991, p49
PC-based DAS helps memory maker profile temperatures; APR, 1992, p79
PC-based DAS improves high-speed carton assembly line; SEP, 1992, p87
PC/104: A compact, modular embedded PC architecture; JUL, 1992, p25
PLC helps solvent extraction process clean up Superfund site; MAY, 1990, p111
PLC improves asphalt production efficiency; NOV, 1990, p91
PLC meets casting machine's special safety needs; JUN, 1990, p91
PLC offers big system features for fewer dollars; APR, 1990, p108
PLC-based DCSs make the most of existing control equipment; OCT, 1990, p41
PLC-based SCADA system provides economical yet flexible control; OCT, 1990, p185
PLC-based system monitors and documents pollution abatement; FEB, 1991, p53
PLC/operator interface system cuts downtime at blowmolding plant; JAN, 1990, p103
PLCs and PCs up product quality and throughput at spice plant; MAY, 1991, p99
PLCs and network speed infant formula production; JUN, 1991, p79
PLCs help flour mill double production; JUN, 1991, p77
PLCs, satellite control crude oil pipeline; SEP, 1991, p65
PLCs: Cornerstone of fiber plant's CIM installation; AUG, 1992, p33
PLCs: New challenges lie ahead; MAR, 1992, p25
PLCs: What's ahead? MAR, 1990, p37
PLCs: What's new? MAR, 1991, p25
Panel display/controller retrofit eases OI task, tightens control; OCT, 1990, p177
Parallel processing in control; SEP, 1990, p41
Parts tracking starts with character recognition; MAY, 1990, p101
Performance: The new control target; MAR, 1990, p23
Personal computer works in embedded applications; SEP, 1992, p92
Plunging PC prices bring smiles; APR, 1992, p4
Pneum. vs hyd. for motion control; FEB, 1992, p55
Pollution: negatives and the positives; JUL, 1992, p13
Practical approach to SPC/SQC; DEC, 1990, p29
Preparing for new smokestack monitoring regulations; FEB, 1992, p47
Pressure measurement: Small and accurate prevail; FEB, 1990, p41
Process controllers to grow 13.8%; JAN, 1991, p67
Program/Product Guide to ISA/92; OCT, 1992, p89
Programmable controller plugs into AT and EISA bus systems; SEP, 1992, p90
Programmable controller uses twisted-pair I/O network; JAN, 1991, p92
Programmable controllers automate component testing; APR, 1990, p97
Project management: Software alone can't do the job; MAR, 1991, p57
Proprietary standards: another way; JUN, 1991, p70
Putting PC features on industrial bus; APR, 1992, p23
Putting photoelectric devices to work in the real world; AUG, 1990, p39
Putting sensors to work in food; FEB, 1991, p23
Putting the pressure on pressure sensing technology; FEB, 1992, p35
Q & A Session: The Interoperable Systems Project; OCT, 1992, p33
Real-time DAS goes network; MAY, 1990, p127
Reduce solenoid valve power drain; MAR, 1990, p59
Relational database: Backbone of CIM;SEP, 1991, p39
Remote motion interface simplifies machine control; JUN, 1990, p106
Repeating history; AUG, 1992, p21
Report card on distributed control for cogeneration system; FEB, 1990, p77
Retrofit systems integration project slashes downtime by 95%; JUL, 1990, p83
Risk management: A service that can prevent disasters; NOV, 1992, p33
Robots & Vision Automation Show; MAY, 1990, p89
Roundtable: The road to CIM in the process industries; MAY, 1991, p44
Rubin, Steve, of Intellution; An exclusive interview with; OCT, 1991, p65
SCSI moves into the factory; OCT, 1991, p71
SP50 standard: Patience will pay off; MAR, 1991, p43
STD bus handles I/O tasks for Multibus II; SEP, 1990, p56
STD bus system monitors wave soldering machine; MAY, 1990, p115
Saturn Corp. finds MMS key to flexible CIM development; AUG, 1992, p23
Scanning IR thermometer makes multiple measurements at once; JUN, 1991, p82
Selecting a UPS for industrial control; OCT, 1990, p61
Selecting and applying I/O; DEC, 1991, p25
Selecting control valves with an eye towards safety; JAN, 1992, p67
Selecting operator training services; JUL, 1992, p63
Selecting strip chart recorders; OCT, 1991, p137
Selecting strip-chart recorders; OCT, 1990, p99
Selecting strip-chart recorders; OCT, 1992, p93
Sensors Expo '91 to showcase wider range of products; SEP, 1991, p59
Sensors Expo West '92; APR, 1992, p71
Sensors Expo West conference; FEB, 1990, p67
Sensors Expo to draw more than 265 exhibitors; AUG, 1990, p53
Sensors allow utility to safely use tie lines to maximum capacity; APR, 1990, p106
Sensors series tackles the tough tasks; AUG, 1991, p4
Sensors that help fight water pollution; AUG, 1991, p41
Servos: A good alternative to variable-speed drives; MAY, 1992, p59
Setting up a calibration program; JAN, 1992, p77
Shared SCADA system and software run suburban water system; FEB, 1991, p73
Short term's good too! JAN, 1990, p25
Signal conditioners: Getting the most for your money; SEP, 1992, p65
Single- vs multifunction DAQ boards; DEC, 1992, p29
Single-loop controllers aid in safe, efficient disposal of toxic waste; JUN, 1990, p101
Single-loop controllers provide flexibility; SEP, 1990, p93
Smart IR sensors improve product quality, process efficiencies; JUN, 1991, p43
Smart pressure transmitters; FEB, 1991, p39
Smart sensors meet today's more demanding control needs; AUG, 1990, p45
Smart sensors, fieldbus standard to change industrial I/O's role; JUL, 1990, p25
Smart single channel I/O saves dollars; JUL, 1990, p31
Smart transmitters get smarter; SEP, 1992, p77
Smart transmitters make their move; JUN, 1990, p47
Software brings simplicity and realism to industrial OIs; MAY, 1992, p37
Software issues for bus boards: Check the operating system first! DEC, 1990, p45
Software key to flexible motion control; DEC, 1990, p57
Software links processing and business operations and decisions; NOV, 1990, p87
Software products link industrial computers, PLCs, PCs; JUL, 1991, p71
Software products support process and manufacturing industries; SEP, 1990, p107
Software: The new hardpan of control; MAR, 1992, p4
Solid-state motor controllers solve pump surge problems; NOV, 1991, p29
Solving problems with digital panel meters; FEB, 1990, p69
Sorting out liquid level sensors; FEB, 1992, p31
Special I&CS-LIT section; JAN, 1991, p45
Special I&CS-LIT section; APR, 1991, p51
Special I&CS-LIT section; JUL, 1991, p31
Special I&CS-LIT section; OCT, 1991, p77
Special I&CS-LIT section; JAN, 1992, p31
Special I&CS-LIT section; APR, 1992, p43
Special I&CS-LIT section; OCT, 1992, p59
Specifying and installing presence sensors: Some dos and don'ts; NOV, 1990, p44
Speech recognition: A good choice for real-time control; APR, 1992, p59
Standard drivers could eliminate numerous obstacles; JUN, 1991, p71
Standard graphical user interfaces give OIs a com-

mon look and feel... MAY, 1990, p49
Standard: sacrifices, but more benefits; JUN, 1991, p69
Standardized software drivers: A plus to some, negative to others; JUN, 1991, p67
State logic diagnostic system cuts fiber production downtime; MAR, 1991, p73
Statistical process control for the chemical and petroleum industries; DEC, 1990, p23
Staying ahead of air pollution regulations; MAY, 1992, p65
Staying power is critical; SEP, 1991, p21
Survival at IBM Toronto: Flexibility is key to global competitiveness; AUG, 1992, p45
System thermometer for process measurements and RTD calibration; JUN, 1991, p81
Systems integration to grow 20%/year through '93; JAN, 1990, p87
Systems integration: "It ain't easy!"; JUN, 1990, p29
Systems integrators come in four flavors; FEB, 1992, p21
Tackling a bear of a synchro control problem; JAN, 1990, p107
Tackling the servo vs stepper decision; MAY, 1991, p27
Take the bus...and leave driving to us; APR, 1992, p33
Taking the anxiety out of ISO 9000 registration; JUN, 1992, p52
Taking the mystery out of microcontroller selection—Pt. 1; AUG, 1991, p19
Taking the mystery out of microcontroller selection—Pt. 2; SEP, 1991, p55
Technical services to see 130% growth; NOV, 1992, p4
Temperature controllers are getting smaller and better; JUN, 1991, p27
Text-based terminals: Tools worth a second look; MAY, 1992, p33
That bomb's still ticking, folks!; JUN, 1992, p4
The buck could stop with you; JUL, 1990, p23
The cell controller in a PLC environment; AUG, 1990, p33
The fourth platform: Where the action is; AUG, 1990, p25
The impact of new technology on sensors for control; FEB, 1990, p55
There are risks...and there are risks!; FEB, 1991, p21
Thermal gas mass flow controllers move into the process industries; FEB, 1991, p31
Thermocouples vs RTDs: The battle continues; JUN, 1990, p43
Things are better than we think!; JUL, 1991, p15
Three-phase automation systems need power conditioning, too!—Pt. 1; OCT, 1992, p49
Three-phase automation systems need power conditioning, too!—Pt. 2; NOV, 1992, p65
Today's DPMs: Meters and much more; AUG, 1991, p47
Today's noncontact sensors do a whole lot more; MAY, 1990, p73
Today's signal conditioners do more than clean up signals; MAY, 1992, p53
Touchscreen terminals ease data entry; JUL, 1992, p72
Touchscreens find a home in the factory; MAY, 1991, p59
Triple-redundant shutdown system replaces relays cost effectively; DEC, 1990, p61
Two good, too much, from two firms...; JUL, 1991, p4
U.S. demand for sensors and transducers reached $3.86 billion in 1990; JAN, 1991, p67
U.S. schools have "product" problems; JUN, 1991, p25
Upgrades give software longevity; DEC, 1992, p53
Upgrading your bubbler: Add on or install new? NOV, 1992, p59
User-designed CIM leads to better applications, higher productivity; NOV, 1990, p81
Users and vendors both wary of driver standard; JUN, 1991, p68
Using ARTIC in PC-based distributed control systems; OCT, 1990, p47
Using programmable controllers in batch processing applications; JUN, 1990, p67
Using proximity sensors to measure position; OCT, 1990, p95
Using software for process control; OCT, 1990, p87
VMEbus PLC saves, programs easily; OCT, 1991, p134
Value-added distributors meld high technology and local service; OCT, 1991, p103
Variable speed drives: What's new? JAN, 1990, p51
Variable speed motor controls give printers precise exposures; OCT, 1990, p114
Vision systems focus on color, motion; JUL, 1991, p21
Waste treatment plant automates on-line cyanide analysis; FEB, 1990, p81
We talk too much...; OCT, 1991, p23
Wescon/90 to draw more than 1100 exhibitors; NOV, 1990, p74
Wescon/91 to draw 1300 exhibitors; NOV, 1991, p52
Wescon/92; NOV, 1992, p6
What a systems integrator can do; FEB, 1991, p49
What line scan vision systems can do; MAY, 1991, p78
What's new in A/D converters? JUN, 1992, p67
When the going gets tough, industrial PCs keep going! MAY, 1990, p79
Why the Mac works in control; APR, 1991, p81
Why ultrasonics for noncontact position sensing? APR, 1992, p39
Windows 3.0 and DDE help PCs move data around the plant floor; APR, 1991, p77
Windows 3.0, 68020 boost DCS productivity, enhance performance; OCT, 1991, p136
Windows 3.1: Ready for industrial action? JUN, 1992, p61
Windows software combines modeling, PLC code generation; OCT, 1991, p146
Windows' DDE: One solution to reliable data exchange; NOV, 1992, p47
Workstation has GUI, mouse emulator ; APR, 1991, p111
Workstation/X Windows architectures provide flexibility for process control—Pt. 1; JUL, 1991, p57
Workstation/X Windows architectures provide flexibility for process control—Pt. 2; AUG, 1991, p25
Workstations help control world's largest autoclave; SEP, 1990, p102
World PLC market to hit $5.5 billion; JAN, 1991, p67
World pressure sensor market to hit $4.5 billion; JAN, 1990, p93
"Humanizing" software; DEC, 1990, p21
"Quality" isn't what it used to be; SEP, 1990, p27

## AUTHORS

Arnold, Ken, Datalogix Formula Systems, Inc.; NOV, 1990, p87
Baker, Robert, Fisher-Baker Corp.; JAN, 1992, p81
Balija, Dave, Lithonia Lighting; OCT, 1990, p111
Banks, Aubrey, Ford Motor Company; JAN, 1990, p115
Baran, David J., General Motors Truck & Bus; AUG, 1992, p29
Barck, Terry, Rosemount Meas. Div.; FEB, 1992, p35
Barker, Dr. John, Data Translation, Inc.; JUN, 1991, p70
Bartosiak, George, Square D Infrared Measurement Division; JUN, 1991, p47
Bates, Carol, Ross Labs; JUN, 1991, p79
Begis, Glenn, Intel Corp.; OCT, 1991, p71
Belton, Keith, the Yankee Group; JAN, 1990, p85
Berkowitz, 1991, P.N., Continental Controls; DEC, 1991, p47
Berra, John, Rosemount Group; OCT, 1992, p33
Beverly, Alan, Ziatech Corp.; APR, 1992, p23
Bevington, Rick, Johnson Yokogawa; NOV, 1992, p21
Bhaskar, K.S., Asyst Software; JUN, 1991, p71
Biesiada, Joseph E., American Spring Wire; OCT, 1990, p97
Blackstone, Stephen, Origin Technology in Business; JUL, 1992, p72
Blankenstein, Lee S., P.E., Fisher Controls International Inc.; OCT, 1990, p53
Blatnica, Leonard J., MSA Instrument Division; AUG, 1992, p55
Blumberg, Donald F., D. F. Blumberg & Associates, Inc.; APR, 1992, p67
Bojarski, Jeanne F., Control Systems International; JUL, 1991, p57; AUG, 1991, p25
Bolendz, Chris, Contec Systems Industrial Corp.; OCT, 1991, p33
Bonina, Anthony T., Eaton IDT; NOV, 1990, p53
Bourdeau, Richard, Digital Equipment Corp.; SEP, 1991, p39
Bowker, Tony, Action Instruments Inc.; MAR, 1991, p43
Brenner, Jerry, Concurrent Computer Corp.; JUL, 1991, p67
Bresson, Matthew J., 1990, P.E., Bresson Rupp Lipa & Co.; OCT, 1990, p71; NOV, 1990, p65;
Brinks, Gery, McCormick Flavor Group; MAY, 1991, p99
Bruce, Ian, Analog Devices; APR, 1990, p59
Bryant, Michael J., Matrix Corp.; SEP, 1990, p56
Burgher, Mike, Microware Systems Corp.; DEC, 1990, p45
Byerly, Mike, Data Translation, Inc.; MAY, 1991, p78
Byers, 1992, Pat, Solid Waste Authority, 1992, Palm Beach County, Florida; AUG, 1992, p67
Cabral, John, American Cyanamid Co.; JAN, 1990, p99
Campbell, Joseph E., Adept Technology, Inc.; NOV, 1990, p76
Caputo, Don, 1991, Parker Hannifin Corp.; FEB, 1992, p55; AUG, 1991, p33
Cashman, 1991, Pat, Ross Labs; JUN, 1991, p79
Chafin, Earl, Texmate, Inc.; JUN, 1991, p27; AUG, 1992, p51
Chandler, Michael E., U.S. Data Corp.; SEPT, 1992, p35
Chase, Jack, Keithley Instruments; DEC, 1992, p29
Chatha, Andrew, Automation Research Corp.; JAN, 1990, p87; JAN, 1991, p67; OCT, 1992, p29
Chin, Wilkin, Krohne America, Inc.; FEB, 1992, p25
Chirignan, Claude, 1991, PMI Motion; NOV, 1991, p25
Cieslek, 1992, Philip R., Weyerhaeuser Paper; FEB, 1992, p78
Clarke, Rob, Bristol-Myers; JAN, 1990, p103
Cleaveland, Peter, Senior Technical Editor; JAN, 1990, pp31, 51; FEB, 1990, p86; MAR, 1990, pp37, 92; APR, 1990, pp108, 111; MAY, 1990, pp129, 134; SEP, 1990, p28; DEC, 1990, p70; FEB, 1991, p81; MAR, 1991, pp25, 80; APR, 1991, p109; JUN, 1991, p81, 82; OCT, 1991, pp134, 147; JAN, 1992, p15; FEB, 1992, p83; MAR, 1992, p73; APR, 1992, p86; MAY, 1992, p76; JUN, 1992, p43; AUG, 1992, p70; SEPT, 1992, p90; OCT, 1992, p123; NOV, 1992, p72; DEC, 1992, p59
Clyne, Craig, Micron Technology, Inc.; APR, 1992, p79
Collins, Dick, Borg Warner Automotive; JUL, 1992, p70
Colson, William J., Intel Corp.; OCT, 1991, p71
Coogan, Timothy E., Adept Technology, Inc.; NOV, 1990, p76
Cooper, Steve, RadiSys Corp.; SEP, 1990, p77
Cooperstein, Bernard, EMC Consultant; JAN, 1992, p23
Costa, Daniel W., 1991, P.E., Miles Inc.; MAY, 1991, p34
Cox, Terrence CAD/CAM Integration; JUL, 1991, p73
Cummings, Bill, Omron Electronics, Inc.; SEP, 1991, p45; OCT, 1991, p99
Currier, Don, Custom Recovery Systems; OCT, 1990, p181
Curtis, Dennis, Dan River, Inc.; JUNE, 1990, p35
D'Acre, 1990, Patrick, Action Instruments; MAY, 1990, p79

# ICS Editorial Index: 1990-1992


D'Aquila, Daniel S., 1990, Pacific Scientific; DEC, 1990, p57
Dale, Ken, Industrial Computer Source; SEPT, 1992, p87
Dan Haraburda, Rapistan Corp.; JAN, 1991, p79
Davis, Andrew, Cirrus Technology; APR, 1991, p81
Davis, Joachim, Lucas Deeco; JUL, 1992, p72
Davis, Kent, GE Fanuc Automation North America; JULY, 1990, p38
Dean, Ken, Fram Filters; JUL, 1992, p66
Dehne, Tim, National Instruments; APR, 1990, p87
Deiters, Steve, Balluff, Inc.; OCT, 1990, p95
Depka, Jeffrey, Allen-Bradley Co.; JUL, 1991, p61
Deyo, 1992, Paul, Duke Power Company; NOV, 1992, p69
Dineson, Mark Athens, AEG Olympia; NOV, 1990, p57
Dixon, David, 1992, PE, ABB Environmental Services; MAY, 1992, p65
Doran, Charles, Burr-Brown; MAY, 1991, p85; JUN, 1991, p61
Dorsey, Ed, Automatic Switch Co.; MAR, 1990, p59
Dowling, Randy, Air Products Mfg. Corp.; DEC, 1990, p61
Downing, Thomas M., Lear Siegler Measurement Controls Corp.; FEB, 1992, p47
Dunbar, Richard D., Honeywell, Inc.; FEB, 1991, p23
Dutton, Kevin, Caterpillar, Inc.; JAN, 1991, p79
Dyck, Ray, IBM Canada, Ltd.; AUG, 1992, p45
Earles, Todd, Microware Systems Corp.; MAY, 1992, p37
Ekelmans, A.J., Dresser Masoneilan; JAN, 1991, p63
Elley, David, BP Chemicals; NOV, 1991, p63
Emerson, Amy, Market Intelligence Research Company; JAN, 1991, p67
Engweiler, Glen, 1991, Planar Systems; AUG, 1991, p45
Fahey, Bill, Eastman Kodak Company; OCT, 1990, p114
Fakhrai, Hamid, Intel Corp.; AUG, 1990, p64.
Ferrari, Wayne, Compumotor Division, 1991, Parker Hannifin Corporation; MAY, 1991, p27; AUG, 1991, p28
Finster, Ken, STD bus Mfrs Group; JUL, 1992, p15
Firth, Barry K., Weyerhaeuser Paper Co.; FEB, 1992, p78
Ford, William S., AMETEK PMT Division; JAN, 1992, p73
Foster, Earle, Computer Dynamics; FEB, 1990, p84
Freeman, Miles, Westinghouse Electric Corp.; DEC, 1990, p65
Frey, Robert, Allen-Bradley Co.; JUL, 1991, p61
Frick, Norman, South Carolina E&G; APR, 1991, p104
Fry, John, BDM International; MAY, 1990, p101
Fumagalli, John, 1990, Pro-Log Corporation; MAY, 1990, p115
Furman, Brian R., Double Eagle Steel Coating Co.; MAR, 1990, p81;
Gallagher, Michael R., Square D Co.; OCT, 1991, p103
Garrone, 1992, Paulo, SMAR International; SEPT, 1992, p77
Garwood, Robert, Banner Engineering Inc.; AUG, 1990, p39.
George, Gary, OPTO 22; OCT, 1992, p35
Gibson, Larry, Action Instruments Inc.; SEP, 1991, p29
Gleixner, Richard A., 1990, PhD, Battelle Institute; FEB, 1990, p73
Glow, Fred, Automation Research Corp.; JAN, 1991, p67
Goodwin, Barry, Ross Labs; JUN, 1991, p79
Goss, Frank G., Hewlett-Packard; MAR, 1990, p25
Goulet, Kevin, ONEAC Corp.; OCT, 1992, p49; NOV, 1992, p65
Goulet, Kevin, Oneac Corporation; APR, 1991, p25
Grace, Chantal, Automation Research Corporation; JULY, 1990, p25
Granitz, Richard F., AMP Incorporated; AUG, 1992, p64
Green, Doug, Lockheed Sanders, Inc.; AUG, 1990, p67.
Greenfield, Elliott, Greenfield Mfg., Inc.; OCT, 1991, p132
Grotz, John, Autocon Industries; FEB, 1991, p73
Gruber, Christopher O., CCE, Gilbert Commonwealth, Inc.; MAR, 1991, p57
Grundy, Ken, Matrix Automation, Inc.; JUN, 1991, p77
Gunselman, Charles H., AMOCAMS/MODULAR, Inc.; NOV, 1992, p43
Gutierrez, Keith, Texas Instruments; MAY, 1990, p67
Hahn, Henry, LTV Steel Corp.; JUNE, 1990, p96
Hall, John, Senior Technical Editor; FEB, 1990, p55; MAR, 1990, p90; APR, 1990, p90; JUNE, 1990, pp33, 51; SEP, 1990, p102; DEC, 1991, p19; JUN, 1992, p43
Hardin, M.B., Continental Controls, Inc.; DEC, 1991, p47
Harkey, Dan, IBM; SEP, 1991, p23
Hartung, Ron, Frigidare Company; MAY, 1992, p71
Harvey, Audrey, National Instruments; JUL, 1992, p23
Harvey, Bob, Blackstone Valley Electric; APR; p106
Hayden, Richard D., GE Fanuc Automation North America; AUG, 1990, p27
Hecht, Dr. Hartmut, Siemens AG; OCT, 1992, p33
Heins, Michael J., Central Data Corporation; JUNE, 1990, p63
Henson, Ernest, JDF Electronics; FEB, 1990, p84
Henson, Mike, Automaker, Inc.; JULY, 1990, p83
Hickey, Jack, Editorial Director; JAN, 1990, p25; FEB, 1990, p27; MAR, 1990, pp23, 55; APR, 1990, pp31, 55; MAY, 1990, pp129, 131; JUNE, 1990, p29; July, 1990, p23; AUG, 1990, p23; SEP, 1990, p27; OCT, 1990, p67; NOV, 1990, p21; DEC, 1990, p21; JAN, 1991, p21; FEB, 1991, p21; MAR, 1991, p23; APR, 1991, p23; MAY, 1991, p44; JUN, 1991, p25; JUL, 1991, p15; AUG, 1991, p15; SEP, 1991, p21; OCT, 1991, pp23, 65, 145; NOV, 1991, p23; DEC, 1991, p13; Jan, 1992, p13; FEB, 1992, pp21, 83; MAR, 1992, pp21, 79; APR, 1992, p15; MAY, 1992, p25; JUN, 1992, p21; JUL, 1992, p13; AUG, 1992, p21; SEPT, 1992, p21; OCT, 1992, pp 15, 85; NOV, 1992, p15; DEC, 1992, p15
Hietanen, David J., GE Fanuc; NOV, 1991, p53
Hill, George, Burr-Brown Corp.; JUN, 1992, p67
Hill, John L., American Hydracast Inc.; JUNE, 1990, p91
Himes, Jack, AMP Inc.; DEC, 1990, p51
Hirsh, Daniel C., Intellution; JUN, 1991, p69
Hoeger, George J., Yankee Gas Services Co.; SEP, 1990, p93
Holler, Donald, Ross Labs; JUN, 1991, p79
Holman, Nick, TCS Inc.; SEP, 1990, p93
Hoover, Mark, Schenck Turner, Inc.; FEB, 1991, p79
Hope, Steve, EG&G Flow Technology; FEB, 1992, p67
Howard, James, Industrial Control Co.; AUG, 1992, p33
Howard, Ron, Xycom; APR, 1990, p33
Howe, Brendon, Iconics; JUN, 1991, p70
Hultgren, Charles D., Texas Microsystems, Inc.; SEPT, 1992, p23
Humphries, Walter, Lukens Steel; MAY, 1990, p125
Hutchinson, John P., Lukens Steel; MAY, 1990, p125
Ipser, Jeff, Reliance Electric Company; MAY, 1992, p59
Iverson, Mark, Greg Smith, Spectrum Controls; MAY, 1992, p27
Janovski, Joe, Texas Instruments; FEB, 1991, p49
Jeffrey, Ralph, Michiana Paving and Excavating Co.; NOV, 1990, p91
Jenkins, Robert A., Johnson & Johnson Personal Products Co.; NOV, 1990, p81
Jenney, Ted, Intellution, Inc.; NOV, 1990, p31
Johnson, Dave, G&D Electric Inc.; OCT, 1990, p177
Jones, George R., Resources Conservation Co.; MAY, 1990, p111
Kalman, Jerry L., SIG 32; JUL, 1992, p21
Kane, Ken, Rapistan Corp.; JAN, 1991, p79
Kane, Tom, Rosemount Inc.; JUNE, 1990, p43
Kaye, Steve, Eaton IDT; MAY, 1990, p57
Keefe, John T., Detector Electronics; DEC p25
Keegan, Allen J., Consultant; AUG, 1992, p61
Kincaid, John, 1990, Patrick McGowan, Belden Wire and Cable; SEP, 1990, p84
Kirby, Dr. Peter J., Land Infrared, Div. of Land Instruments International, Inc.; JUN, 1992, p25
Kirk, Robert B., SGS Thomson Microelectronics – Inmos Division; SEP, 1990, p41
Kirkpatrick, Rick, Square D; APR, 1990, p53
Kleppe; Dr. John A., Scientific Engineering Instruments, Inc.; JUN, 1991, p35
Koppernaes, Chris, American Composite Technology; MAR, 1990, p85
Kramer, Hans, Thermofit Systems Division, Raychem Corporation; APR, 1991, p113
Kresinske, Ken, Kodak Bio-Products; APR, 1990, p93
Kuelzow, Christopher, Kuelzow and Co.; APR, 1992, p59
Kuhfeld, Ron, Managing Editor; OCT, 1990, p87; MAY, 1991, pp 4, 44; JUN, 1991, p4; JUL, 1991, p4; AUG, 1991, p4; SEP, 1991, p4; OCT, 1991, p4; NOV, 1991, p4; JAN, 1992, p4; FEB, 1992, p4; MAR, 1992, p4; APR, 1992, p4; MAY, 1992, p4; JUN, 1992, pp4, 43; 52; JUL, 1992, p54; AUG, 1992, p4; SEPT, 1992, p4; NOV, 1992, p4; DEC, 1992, p4;
Labs, Wayne, Senior Technical Editor; JAN, 1990, pp107, 118; FEB, 1990, pp29, 35, 41, 69; MAR, 1990, p88; APR, 1990, p88; MAY, 1990, pp41, 127, 131; JUNE, 1990, p106; JULY, 1990, p87; AUG, 1990, p72; SEP, 1990, p107; OCT, 1990, pp30, 87; JAN, 1991, p23; MAR, 1991, pp77, 86; APR, 1991, pp35, 49, 111; MAY, 1991, p44; JUN, 1991, p67; JUL, 1991, pp21, 29, 51, 71; AUG, 1991, pp45, 47; OCT, 1991, pp27, 136, 146; APR, 1992, p88; SEPT, 1992, pp71, 92; NOV, 1992, pp47, 74; DEC, 1992, pp53, 58
Lang, Gary, Rosemount Analytical Inc.; APR, 1991, p99
Larson, Bruce, Rosemount Inc., Measurement Division; JAN, 1992, p77
Laurita, Anna, MIRC; JAN, 1990, pp92, 93
Lazzaro, Sam, 1992, Pepperl+Fuchs® Inc.; APR, 1992, p39
Lehrbaum, Rick, Ampro Computers; JUL, 1992, p25
Lennon, Charles A., 1990, P.E., Bureau of Reclamation; JUNE, 1990, p103
Lindenmuth, Kevin, Atlas Technologies, Inc.; OCT, 1990, p137
Lipka, Frank, Hoeganaes Corp; JUNE, 1990, p77
Loeppert, 1992, Peter V., Monolithic Sensors; FEB, 1992, p41
Loner, Wayne, Allen-Bradley Company, Inc.; JUNE, 1990, p67
Ludlow, Dwayne, Kaiser Aluminum & Chemical; MAY, 1990, p122
Lukitsch, Walter J., Allen-Bradley Co.; NOV, 1991, p29
Lundgren, Eric, AEG Westinghouse Industrial Automation; NOV, 1990, p57
Lupo, Don, Acromag; SEPT, 1992, p65
Maclay, Walt, Strawberry Tree Inc.; JUN, 1991, p68
Maki, Krista, IBM; SEP, 1991, p23
Markiw, Joseph, Am. Steel & Wire; OCT, 1991, p129
McHugh, 1990, Peter, Omron Electronics, Inc.; MAY, 1990, p73
McIntyre, Joe, Delta Controls Corp.; FEB, 1992, p31
McKee, Lance, Concurrent Computer; JUL, 1991, p67
Melear, Charles, Motorola Microprocessor Products Group; SEP, 1991, p55; AUG, 1991, p19
Meller, Dennis, Scottdel, Inc.; NOV, 1991, p33
Mercer, Ferrell, GE Fanuc Automation; NOV, 1991, p53
Mick, Robert, Intec Controls Corp.; MAY, 1992, p33
Midyett, Bob, USDATA Corporation; APR, 1990, p41; NOV, 1990, p25

Miles, Michael E., Worcester Controls; JAN, 1992, p67
Miller, Lance, Eaton IDT, Inc.; SEP, 1990, p102
Miller, Larry, McKnight-Miller Woodworking Machinery Div.; MAY, 1992, p74
Miller, Meredith D., Fisher Controls; JAN, 1990, p45, JAN, 1992, p63
Mintz, Stan, Action Instruments; JUN, 1992, p71
Mitchell, Bill, Micro Switch, a Honeywell Division; AUG, 1990, p45; FEB, 1991, p23
Modell, Donald J., Texas Instruments; OCT, 1990, p41
Monaghan, Terence R., Municipality of Seattle, APR, 1990, p101
Montgomery, Mike, Caterpillar, Inc.; JAN, 1991, p79
Moore, Ralph L., E.I. DuPont deNemours & Co.; DEC, 1990, p39
Morell, Brian, Furnas Electric Co.; NOV, 1990, p91
Morin, Dennis R., Wonderware Software Development Corp.; APR, 1991, p77
Morley, Richard E., Flavors Technology, Inc.; SEP, 1990, p47
Morris, Greg, Honeywell Industrial Automation and Control; NOV, 1992, p23
Morrison, Robert, Burr Brown; OCT, 1991, p57; NOV, 1991, p43
Morse, David, Intellution Inc.; MAY, 1990, p49
Mulcaster, 1992, Peter, IBM Canada, Ltd.; AUG, 1992, p45
Murphy, 1992, Pat, Omron Electronics, Inc.; MAR, 1992, p45
Natarajan, Subbiah, 1991, P.E., Monsanto Chemical Company; MAR, 1991, p73
Neel, Rayfield M., Jr., Roberts Systems, Inc.; SEPT, 1992, p87
Newman, 1990, Paul, Clary Corporation; OCT, 1990, p61
Noblett, Fred, Jr., Allen-Bradley; JUN, 1992, p79
Nodorp, Richard W., Honeywell Inc.; JUNE, 1990, p47
O'Brien, Christopher, Moore Products; FEB, 1991, p35
O'Donnell, Mel, Fisher Controls; OCT, 1992, p33
O'Neill, Chris P., Crawford & Co.; NOV, 1992, p33
Offutt, Pamela Y., Texas Instruments; OCT, 1992, p117; DEC, 1992, p45
Olson, Ronald W., GE Fanuc; NOV, 1991, p53
Orfali, Robert, IBM; SEP, 1991, p23
Ostling, Hoag, Johnson Yokogawa; FEB, 1992, p23
Page, L. Dennis, Intelligent Instrumentation; SEPT, 1992, p55
Panizza, K., Westinghouse Electric Corporation; FEB, 1990, p77
Parkinson, Keith, QuesTech Ventures, Inc.; SEP, 1990, p99
Passano, Stephen, Salem Furnace; MAY, 1990, p125
Peckham, Clarence, Heurikon Corp.; JAN, 1991, p57
Peer, Marque, Great Plains Industries; FEB, 1992, p67
Peickert, LeRoy M., 1990, P.E., Instrument Control Systems; OCT, 1990, p185
Peppler, Charles, FASTech Integration, Inc.; AUG, 1990, p67.
Petersen, Erick, Tektronix Network Displays Division; MAY, 1991, p59
Peterson, Marc, GE Fanuc Automation; FEB, 1991, p53
Phillips, Marc, GW Instruments, Inc.; MAR, 1990, p85
Pieszchala, Tim, TRI-SEN Systems; MAY; p105
Pleshek, Elaine, Interphase Corp.; MAR, 1992, p41
Plewka, Mark, Atlas Technologies, Inc.; OCT, 1990, p137
Polsonetti, Chantal, Automation Research Corp.; OCT, 1992, p29
Poppe, Fred, Elik Fooks, Allen-Bradley Co.; NOV, 1990, p44
Porat, Shai, ROSH Intelligent Systems, Inc.; MAR, 1990, p63
Potter, David, National Instruments; DEC, 1992, p41
Power, 1991, pat, Moore Industries-Int'l; DEC, 1991, p43
Prasad, Arbind, BCM Engineers; NOV, 1991, p47
Prentice, David I., Unocal Chemicals Division; JUNE, 1990, p35
Raymond, Kurt, IDAC; FEB, 1992, p73
Redelfs, Dave, Intel Corp.; SEP, 1990, p61
Reed, Robert, Miles Inc.; MAY, 1991, p34
Regberg, Marc, Venture Development Corp.; JAN, 1990, p91
Rhoads, Michael, EDS; DEC, 1991, p39
Rhyne, David, 1990, Ph.D., Fluor Daniel Inc.; MAR, 1990, p63
Risse, Lori, Moore Industries-International, Inc.; JULY, 1990, p31
Rodie, Chris, Intecolor Corp.; MAY, 1991, p53
Rorech, Gregory J., Geraghty & Miller; AUG, 1991, p41
Rose, Jim, Gould Electronics Ltd.; OCT, 1990, p75
Rubin, Stephen E., Intellution Inc.; JUN, 1991, p69; APR, 1992, p33
Rubin, X. Kim, GreenSpring Computers; APR, 1992, p29
Rundel, Bernd, Burr-Brown GmbH.; JUN, 1992, p67
Rupp, John, Phoenix Contact Inc.; JUN, 1991, p73
Rupp, Les, Siemens Industrial Automation; SEPT, 1992, p31
Rupp, Roger G., Jr., P.E., Bresson Rupp Lipa & Co.; OCT, 1990, p71; NOV, 1990, p65
Russo, Robert S., ATS Services Group; FEB, 1991, p39
Sampson, Richard, Action Instruments; MAY, 1990, p79
Saucier, Michael F., 1992, Process and Instrumentation Diagnostics, Inc.; JUL, 1992, p63
Sauer, James M., Saturn Corp.; AUG, 1992, p23
Savino, Joseph, Frost & Sullivan; JAN, 1990, p90
Savoy, Lee J., Jr., P.E., Rollins Environmental Services, Inc.; JUNE, 1990, p101
Scalia, J. J, Honeywell, Inc.; AUG, 1990, p33.
Schaper, Judith, statistical consultant; DEC, 1990, p29
Schempp, Ellery, Venture Development Corp.; JAN, 1991, p67
Schloss, Hans D., ILC Data Device Corporation; JAN, 1990, p107
Schmitt, Paul W., MSA Instrument Div.; AUG, 1992, p55
Schneider, Ralf, Rittal Corp.; MAY, 1992, p49
Schuster, Stephen A., Data Translation; DEC, 1992, p25
Schwab, Kelly, Rosemount Inc.; JUN, 1992, p31
Schwartz, J.R., General Foods; FEB, 1990, p77
Schwarz, Karlheinz, Siemens; MAR, 1991, p49; NOV, 1991, p57
Sharp, Kevin, Burr-Brown Corp.; JULY, 1990, p35
Shaw, John A., ABB Process Automation Inc.; DEC, 1990, p23
Sheng, Robert S., Honeywell Inc.; JUNE, 1990, p47
Shiels, Art, Westmin Resources Limited; JUNE, 1990, p107
Shinskey, F.G., The Foxboro Company; SEP, 1991, p49
Simpson, John E., VMETRO Inc.; APR, 1991, p91
Sinduh, Azhar U., Tele-Denken Resources Inc.; MAR, 1991, p53
Smith, Chris, Moore Industries-International; DEC, 1992, p19
Smith, Gary, En-tronic Controls; SEP, 1991, p71
Smothers, Brian, Acculex; FEB, 1990, p69
Speer, Bob, 1990, Piantedosi Baking Co.; JUNE, 1990, p109
Spennato, Nick, Fisher Controls Int'l; JUN, 1992, p79
Stakem, Doug, The Foxboro Co.; DEC, 1992, p47
Stampfli, Lisa M., ITP Systems; JAN, 1992, p45
Stanislaw, Peter, Morrison Berkshire, Inc.; NOV, 1990, p89
Stevens, Mark, Phoenix Contact Inc.; MAY, 1992, p53
Stockman, Samuel, S. Carolina E&G; APR, 1991, p104
Streicher, Tom, MODCOMP IAD; DEC, 1991, p31
Swanson, Ron, efector, inc.; OCT, 1992, p43
Sweet, William L., Superior Machine & Engineering Co.; APR, 1990, p97
Taggart, Bob, Central Soya; MAR, 1992, p67
Tagliaferro, M.S., Dresser Masoneilan; JAN, 1991, p63
Tobiason, Terry L., Hoffman Engineering Co.; MAY, 1990, p85
Tomsick, Chet, Wonderware Software Development Corp.; JUN, 1992, p61
Towner, Douglas, Nematron Corp.; JULY, 1990, p73
Tucker, Chas, Curry Communications; SEP, 1991, p65
Tucker, Robert F., United Electric Controls Co.; JUN, 1992, p35
Tucker, Tilden C., ARMCO, Inc.; OCT, 1992, p121
Tyrrell, Stephen F., Johnson & Johnson Personal Products Co.; NOV, 1990, p81
Ulanski, Wayne, EL-O-MATIC USA; NOV, 1990, p69
Ulrich, Marcel, Pepperl+Fuchs® Inc.; APR, 1992, p39
Van Oeveren, Fred, City of Grand Rapids; FEB, 1990, p81
Vanslette, Paul, Intellution Inc.; MAY, 1990, p49
Van Todd, Diepen, Iowa Public Service Company; JUNE, 1990, p34
Vazquez, Allen, Uehling Instrument Co.; NOV, 1992, p59
VerDuin, William H., Al WARE, Inc.; SEP, 1990, p37
Vetter, Greg R., Control Systems International; JUL, 1991, p57; AUG, 1991, p25
Via, John W. III, P.E., Fischer & Porter; MAY, 1991, p34
Villalobos, Dr. R Annino, Foxboro; APR, 1992, p63
Viswanathan, Shekar, PhD, PE, ABB Environmental Monitoring Systems; MAY, 1992, p65
Vomund, Mike, Chevron U.S.A.; FEB, 1991, p53
Walters, Charles, Geraghty & Miller; AUG, 1991, p41
Walton, Ray, Linklaser Ltd; JUNE, 1990, p111
Warden, D.D., Union Carbide; OCT, 1991, p47
Warren, Cliff, Raytek; JUN, 1991, p43
Watkins, Skip, Steve Loranger, Fisher Controls; OCT, 1992, p23
Wearsch, Henry W., Reliance Electric; JULY, 1990, p69
Welch, Jim, Tylan General Corp.; FEB, 1991, p31
Westwood, Bob, McCormick Flavor Grp; MAY, 1991, p99
Wilkins, Richard, Florida Service Engineers; NOV, 1990, p93
Williams, Douglas, Data Translation, Inc.; JUN, 1991, p70
Williams, Gil, Eaton IDT, Inc.; MAY, 1991, p69
Wilson, Fred, Control Technology Inc.; OCT, 1990, p47
Wontrop, Carroll A., Industrial Drives; NOV, 1991, p33
Wood, David, Lion Oil Co.; SEP, 1991, p65
Wyckoff, Richard, WYTEK Corp.; JUNE, 1990, p83
Yamanaka, Takashi, Yokogawa Electric Corporation; OCT, 1992, p33
Yori, Larry, Scientific Engineering Instruments, Inc.; DEC, 1992, p61
Yusi, Ray, 1991, Polaroid Corp.; JUL, 1991, p73
Zavodny, Bruce, Johnson Yokogawa; OCT, 1991, p75
Zdrodowski, 1990, Paul, Cambrex Corp.; NOV, 1990, p87
Zeitler, George, Ross Labs; JUN, 1991, p79
Zimmer, D.R., Union Carbide; OCT, 1991, p47
Zumpetta, Guy, Keithley Data Acquisition and Control; JAN, 1991, p31